

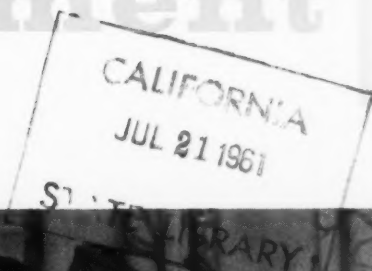
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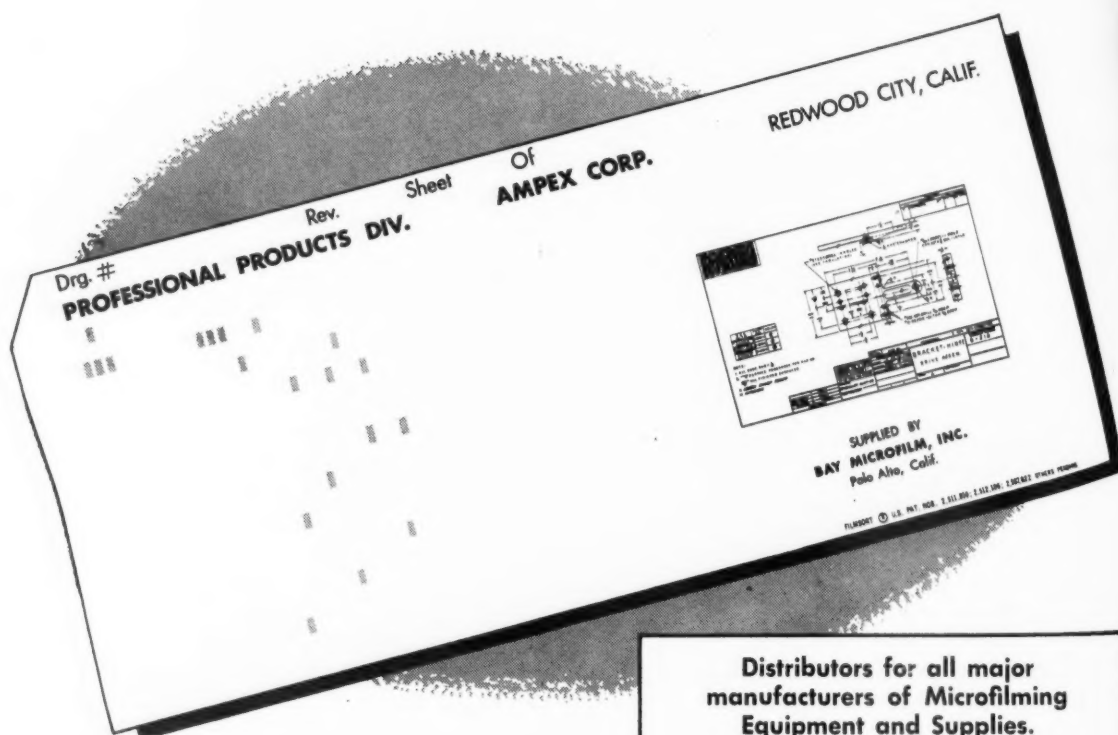
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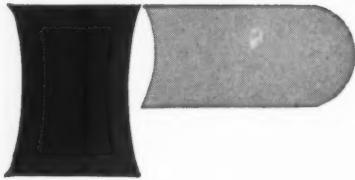
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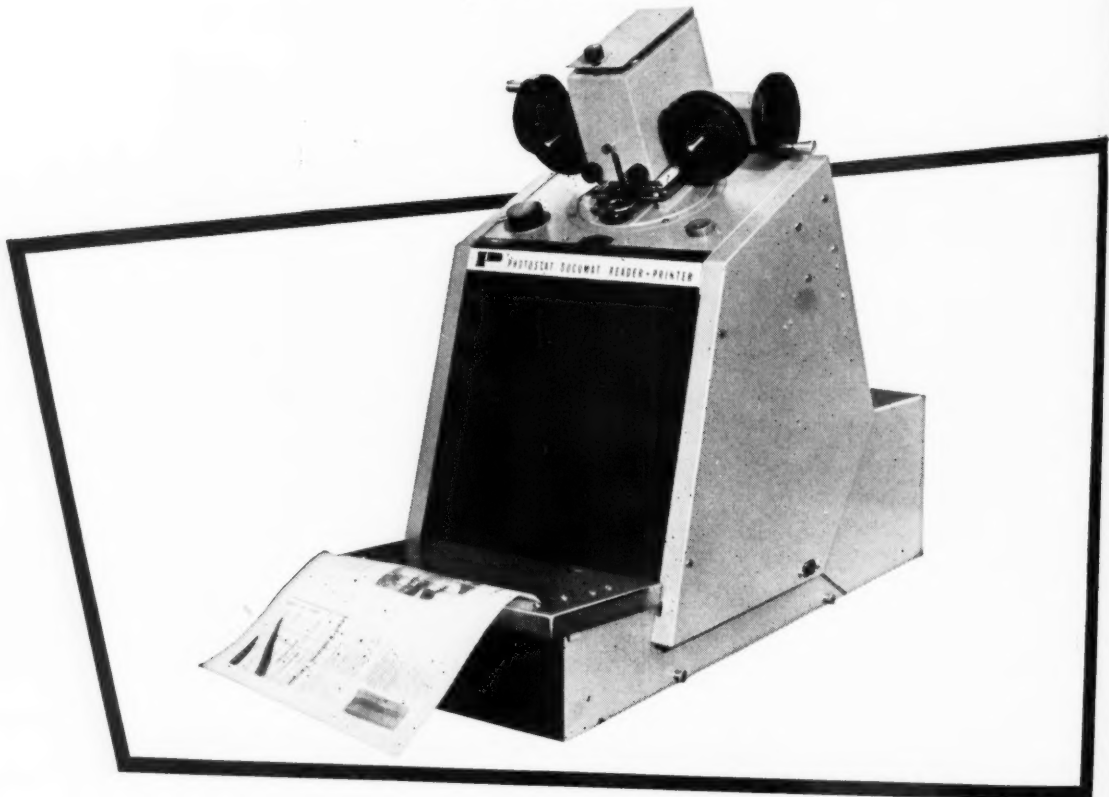
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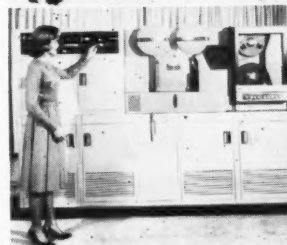
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On the Cover: Stevens L. Shea, Vice President of the American Management Association, in charge of its Administrative Services Division, and our Systems Man of the Month. For further details see page 48.

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EDITORIAL

What is a "Systems Approach?"

"Systems Approach" is a term applied to many fields of technology and management. It is also a term that still creates misunderstanding, often even among the people who are involved in systems operations.

Basically, the systems approach is a discipline based on the fact that any company's operation is an integrated whole, not a conglomeration of individual parts. It is the coordination of engineering, production, operations, office management, record-keeping and information transmission between the company, its suppliers and its customers. The purpose of this coordination is to set up a total operational plan that benefits the entire company. Integrated data processing systems (and their components whether they be computers, tab cards, microfilm records, etc.) are the tools whereby this coordination is accomplished. The systems man is the one who has the job of seeing that the operation plan is devised and executed.

How does the systems man approach his job? There are as many ways as there are individuals but from some talks we have had with systems managers these seem to be the key principles they follow:

They look at their company as a single, integrated operation, almost as a machine with parts. Each functioning department or division is such a part. The machine theory extends from the raw material's source through to the ultimate consumer and each "part's" role in getting it there is analyzed.

Finally, they make systems a continuing subject of study by reading all they can in business and trade papers, looking at advertisements, attending conventions and society meetings. They know that a good systems man's education is never completed.

Industry News

● The 1961 Western Computer Conference held May 9-11 in Los Angeles had as its theme "Extending Man's Intellect." Following Thomas J. Watson, Jr.'s keynote speech the technical sessions opened with papers on digital simulation and Microsystem Electronics. Succeeding sessions covered advances in computer circuits, problem solving and learning machines, information retrieval and trends in large computer system design. The Conference ended with sessions on automatic programming, memory devices and components, applied analog techniques, computers in control and the "human" side of analog systems.



THOMAS J. WATSON, Jr., IBM president, (center) checks a perforated tape reader at the Western Joint Computer Conference. With him are Dr. Walter Bauer (left), Thompson Ramo Wooldridge, and Dr. Keith Uncapher, (right) Rand Corp.

● Emergence of the American Federation of Information Processing Societies on May 10 replaced the National Joint Computer Committee. Delegates of the NJCC, meeting at Los Angeles during the WESCON, created this society of societies "to fill the long recognized need of organizing the advancement and diffusion of knowledge of the information processing sciences at all levels and to all media." AFIPS members are the AIEE, ACM and IRE. Dr. Willis H. Ware, RAND Corp., was elected chairman of

AFIPS' Governing Board. Other Board members are: AIEE — R. S. Gardner (also technical secretary); Claude A. R. Kagan, Western Electric Co.; and Dr. E. L. Harder, Westinghouse; ACM — J. D. Madden, System Development Corp.; Bruce Gilchrist, IBM; and Dr. Jack Moshman, CEIR; IRE — Dr. Werner Buchholz, IBM; Harry T. Larson, Ford Motor Co.; and F. E. Heart, MIT Lincoln Laboratory.

● The third annual "Catalog of Microcard Publications: 1961-1962" has been released by Microcard Editions, Inc., of Washington, D.C. This lists original and reprint materials in science, technology, social science, the humanities and general periodicals available on Microcards.

● A battery of seven forms control specialists assembled in New York for the inauguration session of the "Forms Forum" on April 27 sponsored by the Transkrit Corp. Forum Chairman Ray Marien, Olin Mathieson Chemical Corp., opened the session, explaining its concept. He pointed up the need for an informal get-together of forms authorities to exchange ideas and information on the myriad problems that crop up in the forms field.

● A symposium on the relation be-

tween management information systems and information retrieval sponsored by the American Documentation Institute and Management Dynamics was held May 18-19 at New York's Waldorf Astoria. Speeches and discussions dealt with what management wants from MIS, how information scientists approach systems development, and the role of scientific and technical information banks in MIS.

● Today's code-breaking experts rely heavily on modern electronic computers. These can do in days what used to take months. Herbert O. Yardley, chief of the U.S. code-breaking bureau, draws these comparisons: In 1920 when he was ordered to break Japan's diplomatic codes, it took a corps of typists from April to July just to prepare frequency tables of 10,000 syllables of Japanese telegrams and the same length of time to tabulate and index 10,000 code groups. Recently a robot cryptanalyst at M.I.T. broke a transposition cipher in ninety-one seconds. The real strength of computers in this area lies in their making possible the solution of highly complex ciphers by rapidly performing thousands of repetitive tasks that formerly tied up code men.

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Calendar of Conferences

Bendix G-15 Users Exchange Conference. Denver Hilton, Denver, Aug. 10-12.

Western Computer Conference. Cow Palace, San Francisco. Aug. 22-25.

Association for Computing Machinery. 16th National Conference and 1st International Data Processing Exhibit, Statler Hilton, Los Angeles, Sept. 5-8.

International Symposium on the Transmission and Processing of Information. MIT, Cambridge, Mass., Sept. 6-8.

National Association for Bank Audit, Control & Operation. Conrad Hilton Hotel, Chicago, Sept. 11-13.

Life Office Management Association. 38th Annual Conference, Shoreham Hotel, Washington, D.C., Sept. 25-27.

American Production & Inventory Control Society. 4th Annual National Conference and Technical Exhibit, Pick-Congress Hotel, Chicago, Sept. 28-29.

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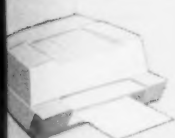
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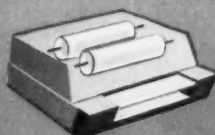
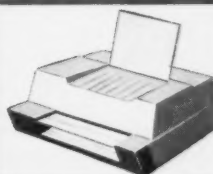
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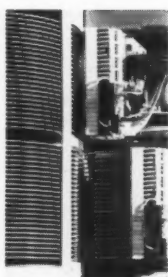
New Equipment Review

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Duplicate Aperture Cards 101

Greater contrast and clarity in third and fourth generations of duplicate microfilm aperture cards is claimed for the Minnesota Mining and Mfg. Co. Dupli-card. The card employs a new type of diazo film and has been designed for use with the company's Filmsort Uniprinter 041. Orange in color to distinguish it from the buff white original, the card is edge-coated to prevent fraying.



Data Storage System 102

IBM has introduced a large capacity disk storage unit for use with a number of its computers. The 1301 disk storage unit contains magnetic disks, each with 250 recording tracks. A single track can record as many as 2,500 alphanumeric characters and an address. These tracks are read by a series of vertically aligned read/write heads that move horizontally across the disk. Initial deliveries will be made in 1962.



Card Guide 103

Tab guides which enable fast reference to data processing information has been developed by the G. J. Aigner Co. The new Aico Tab Guides are reinforced by a strip of Mylar plastic film across the top edge of the card. This provides the necessary rigidity and also prevents soiling because of the smooth plastic surface. The thin Mylar film permits the guides to be run through with EDP cards.



Motorized Microfilm Reader 104

Recordak Corp. has announced what is claimed to be the first motorized low-cost film reader for microfilm use. Designed for use where fast retrieval is necessary, the Starlet accepts 16mm film in Recordak magazines or conventional spools with a simple adapter. Screen size of the unit is 12" wide by 10 7/8" high.



Production Recorder 105

The Standard Register Co. has introduced an integrated system for recording manufacturing information directly into machine language. The new system, called Stanomatic, is said to eliminate the usual clerical steps required before production figures can be compiled into statistical form. A shop recorder used by workers encodes the source information which then is fed to a Reader-Translator which transfers it to tape or cards.



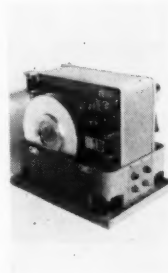
Low Cost Encoder 106

Dashew Business Machines Inc. has introduced a unit designed to create machine language source data at point of use. Called the Printapunch, the device uses embossed plastic or metal cards in conjunction with IBM Portapunch cards to record such information as account numbers and merchandise codes. The Printapunch weighs approximately 20 lbs. and costs \$75 and up.



Microfilm Facsimile System 107

Hogan Facsimile Corp. has developed an information transfer system that will transmit microfilmed information and reproduce it enlarged on translucent paper at the rate of 26 feet per minute. The system consists of a Scanner and Recorder. Signals are sent to the recorder-reproducer by coaxial cable or over a microwave network. It can send the complete text of a 480-page book in only four minutes.



Data Recorder 108

A completely transistorized portable digital recording system has been introduced by Minneapolis Honeywell Regulator Co. Designated the Type 6150 Incremental Digital Recording System, it acquires asynchronous data by a tape stepping method described as economical and dependable. At speeds of 200 steps per inch of tape, 38 hours of continuous recording are handled with one reel of tape.



Adding Machine 109

An all electric adding machine said to be the lowest priced unit with 10 key capacity is being introduced by Cromwell Business Machines. Called the Numerator 99, the unit adds, subtracts and multiplies and has a full nine-figure capacity. The lightweight 8 1/2 lb. machine sells for \$169.50 and is made entirely in the United States.



Offset Duplicator 110

Combining big press qualities for a range of paper sizes from 3 x 5 to 11 x 15 and automatic suction type feeding with two suction heads is the American Type Founders Chief 15 Offset Duplicator. For ease of operation, all operating controls are grouped on the operator's side. The unit has been designed to handle routine black-and-white as well as color work.

continued on page 44

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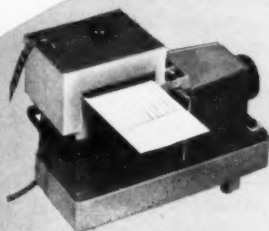
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Information Management



by **HERMAN LIMBERG**
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A Common Language—For People

One of the major achievements of the new data processing technology has been the development and implementation of a *common language* for the sophisticated machines. With this achievement, the concept of "cybernetics," expounded by M.I.T.'s Dr. Norbert Wiener, has been realized. In his book, *"The Human Use of Human Beings,"* published in 1948, Dr. Wiener wrote: "We ordinarily think of communication and of language as being directed from person to person. However, it is quite possible for a person to talk to a machine, a machine to a person, and a machine to a machine."

Now that machines are communicating with other machines through punched tapes and magnetic tapes and optical scanning devices, there has been a discernible trend for human beings to talk to other human beings in the common language of the machines. Thus, we frequently hear people exchanging ideas and greetings with words and numbers that include *Univac, Ramac, 705, 7070, 1401, 304, 501, G-15* and *Solid State*. As this mechanistic jargon increases in range, the ability of people to communicate with people in the language of people seems to be decreasing. This is evidenced by the growing importance of semantics and by the variations in interpretations of words and phrases used in person-to-person communications.

To stimulate interest in a common language for people — particularly people in management — this column offers the first of a series of definitions and clarifications of terms and expressions. Those presented in this issue pertain primarily to information management and systems and procedures.

MANAGEMENT INFORMATION SYSTEM is the total complex in which data are generated, recorded, processed and refined to produce the information *needed* at all levels of organization for planning, directing, evaluating, coordinating and controlling an enterprise.

INFORMATION MANAGEMENT is broader in scope and concept than **MANAGEMENT INFORMATION**. Information management encompasses the planning, evaluation, coordination and control of the generation, processing and utilization of data to provide the information *needed* for both operational and management purposes.

MIS: What it is

MANAGEMENT INFORMATION SYSTEM is the nomenclature more frequently used. Essential elements of such a system are: definition and establishment of objectives, determination of information *needed* to evaluate performance in the light of objectives, effective application of the exception principle, and continuing review and appraisal of the adequacy of the system as the basis of management decisions.

Simply and succinctly stated, the purpose of a management information system is to: determine and provide, as efficiently and economically as possible, what management needs to know.

A **SYSTEM** is a complex of related procedures established to carry out the objectives of a major function. The broad scope of systems should encompass the *facilitation* of accomplishment of objectives, *prevention* of failures to reach objectives, and *correction* of conditions which hamper the fulfillment of objectives.

A **PROCEDURE** is a tributary of a

system and consists of a series of related and sequential operations.

A METHOD is a means or way of performing an operation or series of operations.

Thus, an accounts payable system which should be designed to carry out the objectives of the materials control function should consist of procedures for purchasing, receiving, storing and inspection of materials, and auditing and paying vendors' invoices. The methods used in performing the operations of these procedures may be manual, mechanized, automated, or combinations, ranging from simple handwriting to the most advanced electronic processing techniques.

Variations

DATA PROCESSING is a generic term for systems and procedures, ELECTRONIC DATA PROCESSING is the advanced *method*. INTEGRATED DATA PROCESSING means coordination and integration of data and information which are related, inter-related, the same or similar for a number of activities, to eliminate duplication and unnecessary work.

EXCEPTION REPORTING entails preparation for each organizational level of an analysis and interpretation of performance which *varies significantly* from the established objectives or the normal level of operations. It requires more than a listing of variations, and includes the use of judgment in selecting items to be reported, presenting adequate explanations and interpretations, and recommending corrective action to be taken.

Organization

ORGANIZATION is the means by which the work of an enterprise is divided, grouped and arranged among its personnel for the achievement of the mission of the enterprise.

ORGANIZATION STRUCTURE is the framework for establishing the relationships of workers and their activities to one another and to the enterprise as a whole.

LINE FUNCTION is any function directly related to the prime mission of the enterprise or of any one of its components. It answers the ques-

tion: "What are we in business for?" or "What were we set up to do?"

STAFF FUNCTION is any function which supplements or is auxiliary to a line function.

LINE TYPE OF ORGANIZATION STRUCTURE is one in which there is no separation of staff from line functions and line personnel perform both line and staff functions.

LINE AND STAFF TYPE OF OR-

GANIZATION STRUCTURE is one in which at least some staff function has been separated from the line functions and for which an individual or organizational unit has been assigned specific responsibility.

There are, of course, many more terms and expressions used by people in management, and hence, this is but a beginning. We invite our readers to contribute to this common cause. □



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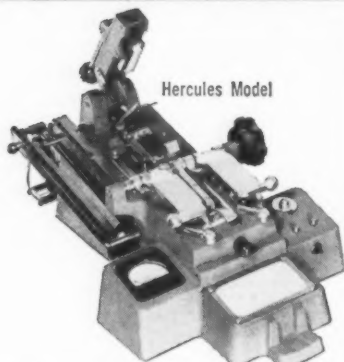
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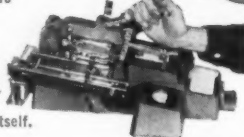
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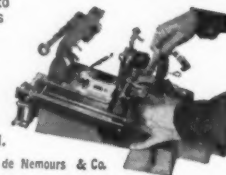
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Microfilm Topics

by HUBBARD W. BALLOU
Columbia University Libraries



Conventions and Training

A convention can be a different thing to each person who attends it. For some it can be the official program, with its panels and papers and awards. For others it may be the chance to appraise closely a new item of equipment that has only been a description in a trade journal, or a note in a column. For one man it may be a chance to hire a new member for his staff. For another it is the opportunity of a job in a more interesting or rewarding institution. For most, it is a time when we meet friends that we see only once a year, and then under the auspicious spirit of the convention.

Record-Breaking Attendance

The Tenth Annual Meeting of the National Microfilm Association was no exception to the pattern noted above. It drew a bigger attendance than any before, and being in Chicago, gathered members from a wider geographical area. As I have noted the pattern of the official program in another report, I would like to comment this time on a subject that arose at one of the luncheons. We had finished checking with each other on the changes produced by the passage of another year, and were trading items of news about members who were not present. As frequently happens, one of us was bemoaning the lack of suitably trained personnel for microfilm jobs. Another noted that many professional societies have a very strong section devoted to the supervision of the education and training of its members. Someone remarked that most microphotographers have come to their present jobs through strange and fortuitous slips of circumstance. The art is such a relatively young one that there has been

little premeditation and preparation before one engages in it.

It was the feeling of the group that most jobs in the supervisory level were filled by raiding staff members from another organization. Some of the larger and older institutions have philosophically accepted the fact that they are considered training grounds for such personnel. In some cases this has been overtly recognized. What could be considered apprenticeship training is given in some of the larger laboratories. This has been rather hit-or-miss, and has resulted in certain disadvantages to both parties. The institution has had to devote valuable time supervising the training of a staff member who will not stay long enough to repay them, and the apprentice gets a course of instruction that is haphazardly organized.

Documentation Courses

The library schools in this country have faced this problem in various ways. A number of them have courses in Documentation. This allows them to devote a certain amount of time to the consideration of microfilming as one facet of this field. Other schools have courses in Technical Services, Audio-Visual Services, or Information Retrieval. Microfilming usually manages to appear as a sub-head under one of these. In my institution, the School of Library Service was the first and boldest adventurer in this field. In 1939 it began offering a course entitled *Microphotography for Libraries*. The passage of time has mellowed (or diluted?) the zeal of the pioneers. The course that I now teach is called *Photoreproduction of Library Materials*, and we frequently wander into the fields of documentation, information retrieval

al, and visual aids; although the bulk of the course is devoted to the various microforms. Though the course is designed to be of greatest benefit to librarians, I have had students who have come to take the course before engaging in other microfilm activities. I will not say that the course has given them everything they should have learned, but it certainly has not harmed them.

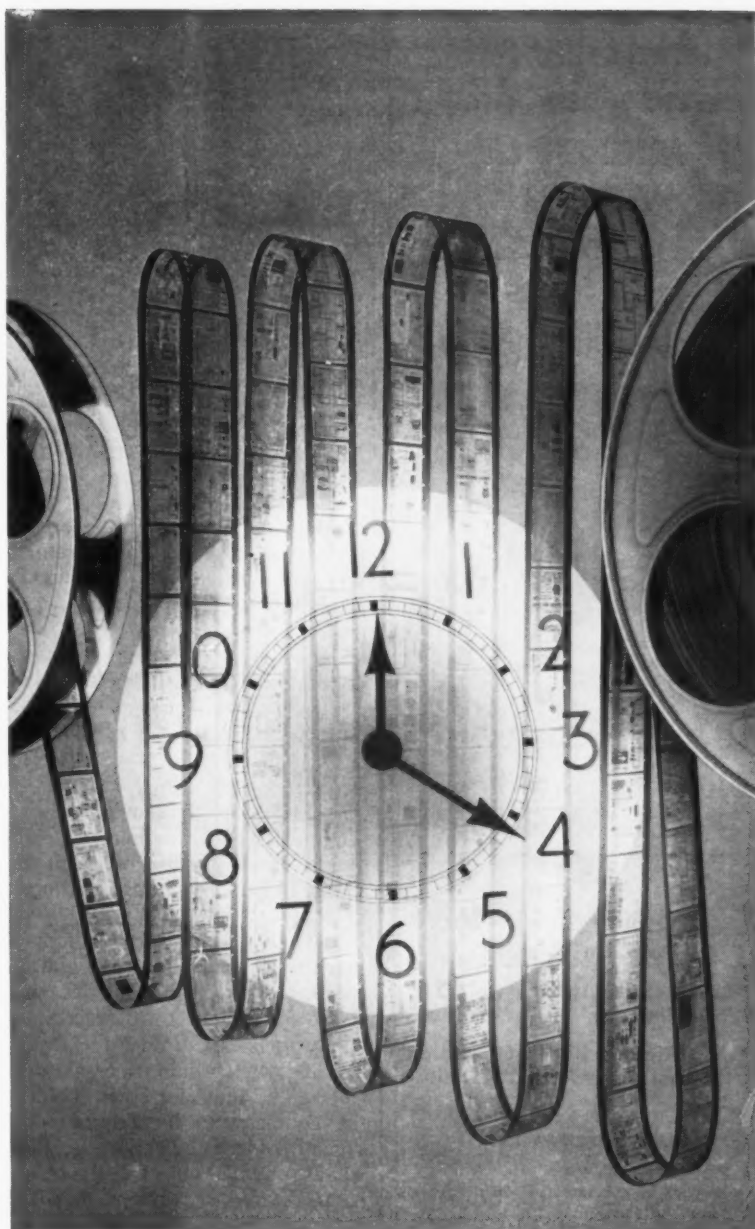
All of this leads up to a fairly obvious conclusion. There is a definite need for courses of instruction in general microfilming. Here could be learned the basic principles, from which one could develop specific applications to one's own field of interest. The National Microfilm Association appears to be a natural focus point where such a training course could be established. It has a membership covering every type of microfilm application. It holds an annual meeting in centralized locations, where concentrated courses could be set up with expert supervision. There is activity underway in this organization to establish local chapters. These could well look into the useful and rewarding service of training better future members. □

INDUSTRY NEWS

continued from page 6

● The communications and systems fields grow so rapidly that it is difficult to keep up with the many new companies organized. Among the most recently set up are Data Sciences, Inc., a group offering services in the analysis, design and installation of systems for digital and graphic information handling . . . acquisition of Space Recovery Systems, Inc. by Itek Corp. . . establishment of a computer center in New York by the Recording & Statistical Corp. designed to furnish insurance companies with a centralized facility for EDP . . . merger of C-E-I-R, Inc. with the Data-Tech Corp. . . organization of a west coast regional office by Digitronics.

continued on page 15



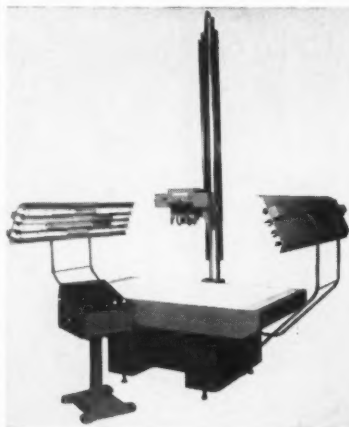
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EDP in Action

by NICHOLAS F. PENSIERO



New Tools for More Effective Marketing

The variety and complexity of marketing management problems makes it necessary that every available tool be utilized. In the last few years mechanical devices have been developed to aid in the solution of marketing problems—namely, computers.

Now that operations research techniques have translated marketing situations into mathematical formulae, we need not be burdened by the non-scientific—the use of hand methods and slow tabulating machines for problem solutions. Computers allow for immediate solutions and provide us with an ability to explore alternative courses of action.

Let's review a typical computer marketing application—"point of purchase analysis"—for X company, a corporation with sales areas and warehouses around the world. The computer would process orders from all of the sales areas enabling the company to handle the most urgent orders quickly. First it would provide an analysis of all items ordered, note their frequency of order, the area of popularity, and those items ordered rarely, simply by comparison of results. This completed information would provide the company with data for rescheduling their warehouse inventories, allowing them to move popular items into one area, and items which have less popularity or demand into other areas. The results would also give a glimpse into customer desires and assist them in planning sales programs and production for the future.

Another example of a good computer marketing application is the experience of the Smith, Kline and French Company which has been

applying EDP techniques to this area since 1960. SKF has set up a master tape of 180,000 doctors throughout the country. Using their ages and specialty, and 25 other sets of criteria, a general profile of each doctor has been established. Data is added to this profile from time to time by salesmen in the form of reports. With this information fed to the computer, SKF deletes those doctors from their mailing list and also those who have been contacted in other ways. Their likes and dislikes are noted. This enables SKF to concentrate their sales promotional efforts on those doctors whom they are not personally calling on. Direct mail programs become less costly, and waste, caused by duplication, has been eliminated among those doctors already familiar with SKF products.

In addition, results can be recorded which permit the establishment of personality indices for these doctors and also for SKF salesmen. The refinement of this marketing technique takes most of the guesswork out of sales planning, and further increases the possibilities of expansion of SKF business.

Employee Selection

Still another company applies EDP techniques to the area of marketing employee selection. It keeps an annually updated record of all its employees at a centrally located computer library. Where a new man is needed, and specific criteria is established, a request is submitted. A search is initiated and, after the computer narrows the prospects to some 10 to 20 persons, interviewers proceed to make the final decision. An operation which heretofore has involved two to three

months can now be routinely handled the same day.

There are many other applications of computer techniques in marketing. For example:

a) *The application of linear programming to sales distribution problems;*

b) *Selection of sites and types of personnel for chain stores and other large business locations where personnel problems are complex;*

c) *Analysis of how alternative allocation of funds would affect expansion.*

Computers and EDP techniques offer marketing managers wider ranges of alternatives. The mark of a successful marketing manager in the future will be his ability to compete effectively with other managers using these same techniques. □

The above column is based on remarks made by Nicholas F. Pen-siero, Manager of Marketing Administration, Computer Division, Philco Corp., at the 44th National Conference of the American Marketing Association.

INDUSTRY NEWS

continued from page 13

● **Quilt-dialing at the Smithsonian.** Ten of the Smithsonian Institute's choice antique quilts are easily accessible to museum visitors who can dial a number and have the desired quilt glide out of storage. This gadget consists of a case somewhat more than twice the size of a bed quilt. Half of it is closed for storage and is decorated with a static display of the history of bed quilts. Half is under glass for viewing the quilt masterpieces.

The machine has memory, too. Dial a series of numbers and the quilts come out in the order dialed. The numbers run from one to nine. A lighted dial board shows the pattern-names of the ten quilts in the case. When a number is dialed the light blinks out on the tiny dial-board title and a light comes up under the large title on the display board. □

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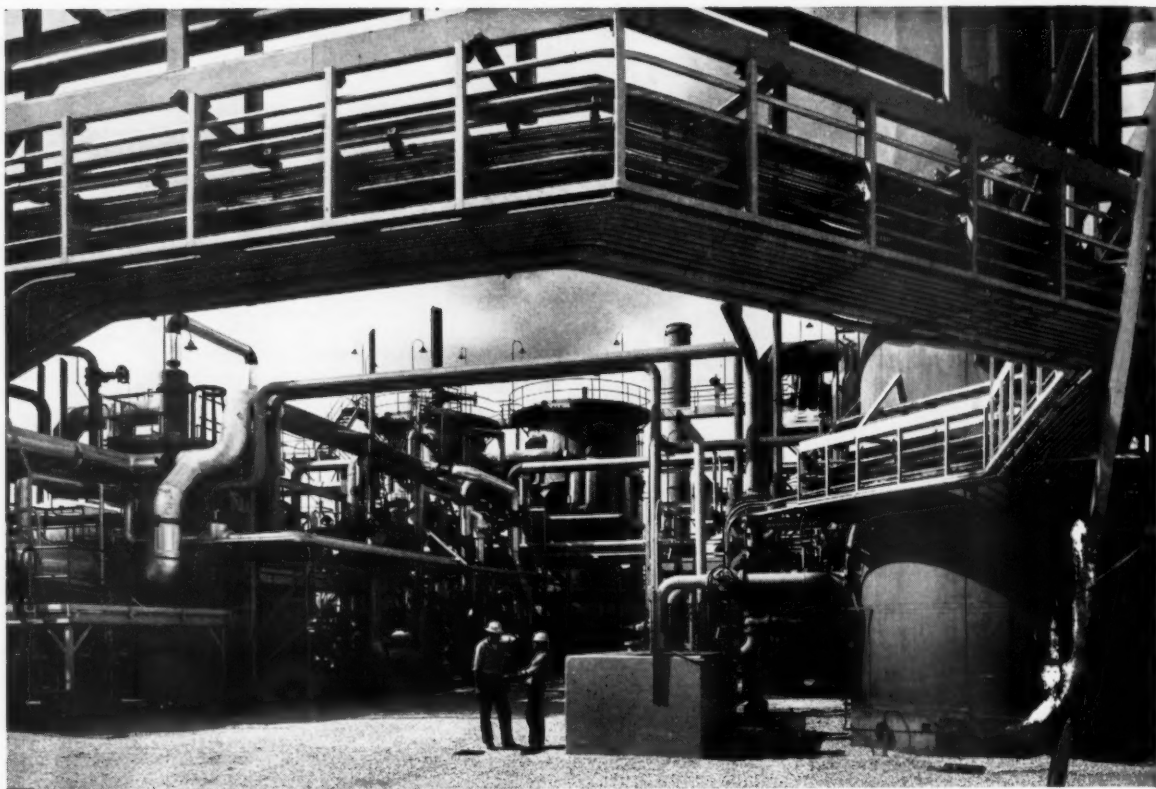
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Computer Reacts to Fertilizer Process

Monsanto profits by computer's plant supervision.

Will the installation of a computer bring profits? This is a key question in feasibility studies conducted prior to the purchase of computer or EDP systems. It is the question that makes the decision a management rather than technical choice.

The Monsanto Chemical Company faced this question years before it changed its Barton ammonia plant in Luling, Louisiana, to its present unique closed loop computer control. Monsanto management decided that a computer installation had to be justified as a production tool rather than as a research or development device. This meant they had to determine

the capital outlay required by the complete installation, develop the estimated increased earnings, and calculate a return on investment as a criterion for decision.

Aware of control systems development in other fields, Monsanto established a systems engineering section to investigate and adapt the techniques and methods available to the chemical industry. At the suggestion of the Ramo-Wooldridge Corporation (now Thompson-Ramo-Wooldridge), a joint study was initiated to determine whether or not a computer could be justified at one of the company's plants.

Three major considerations in justifying computer installation at

the Barton plant were:

(1) The necessity to choose a process where a reasonable improvement would have a chance of justifying its expense;

(2) The industry being traditionally secretive, only a well-known process could be revealed to outsiders. The ammonia process is well-known and the Barton plant's design is freely available;

(3) It was "desirable to have a modern, well instrumented plant so that the computer installation could be judged on its own merits and not be obscured by improvements resulting from chemical engineering changes or additional control instrumentation." Again, the Barton

plant met this requirement.

As part of the general implications of installing a computer it was also found that various criteria of size and complexity had to be met before a computer was justified. Studies indicated that unless a relatively small percentage increase in profit would support the necessary investment, the plant was probably too small for digital computer control.

Overall economic consideration also included the potential increase of the fertilizer market. With a decreasing farm labor force, fertilizer would be increasingly necessary for optimum production of low-priced agricultural goods demanded by a growing population.

Once Installed

These criteria were met and Monsanto installed an RW-300. The computer supervises the multi-step production process of ammonia and its by-products: nitric acid, ammonium nitrate fertilizers, and nitrogen fertilizer solutions.

Basically, the control system is the same as it was before the computer; the variables the computer controls are the same ones originally controlled by the human operator. The difference is that the computer calculates the proper value and automatically sets instruments to accomplish the task whereas the operator was manually setting the same instruments to do the same job. Naturally, the computer can do a much faster and more accurate job of adjusting the instrument set points than an operator.

As the major change in the operation, the computer supervises the pneumatic instrumented plant. It reacts to information transmitted from the various flow, pressure and temperature indicators throughout the system. Receiving this data, the computer reads it, calculates, sends out control signals and prints results all in a few seconds.

This split-second calculation and control adjustment based on complete and detailed observation of all process variables and extensive logging of data have made possible the achievement of increased produc-

tion and higher efficiency.

Since the plant staff was satisfied with the performance of the pneumatic instruments it was decided not to replace these, thus saving the extra expense of electronification. Electronic instruments were added, however, to supply additional information required by computer operation such as pressure and temperature of a few variables required for flow compensation.

With the local plant controls operated pneumatically and overall control electronically, transducers had to be installed to convert pneumatic input signals to electronic signals (when sending information to the control room) and back to pneumatic signals after computer calculations were performed. Separate cabinets were set up to house the input and output transducers.

Sitting at his control desk, the operator observes the working of the system by a bank of lights which signal the status of his output system. When necessary he can switch over from computer to manual control. The system is designed so that certain portions of the control calculations will not take place if particular variables are not on computer control.

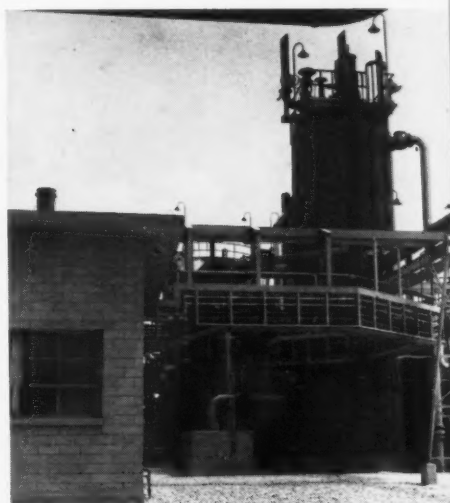
Checking Operations

Linked to the console are two typewriters. One of them logs process information and the other records undesirable or unsafe conditions detected by the instrument scan program.

Various "failsafe" devices are built into the control system to protect against power and instrument failures.

Results have exceeded expectations since the computer has been in operation. Meeting a heavy demand for ammonia and the fertilizers and other nitrogen products based on it, the computer-controlled plant has run thus far only at full capacity.

Regardless of the immediate production advantages to Monsanto, the computer running a process symbolizes a deep, fundamental change in chemical engineering whose effects will be felt from now on. □



BANKS of instrumentation lines link computer in control building with process units.



AMMONIA plant process is automatically controlled by computer-digested data.



OPERATOR reads process-efficiency data from computer-linked automatic typewriters.

Highlights Of The NMA Meeting

by HUBBARD W. BALLOU
Columbia University Libraries

Representatives came from as far as Honolulu and London for the Tenth Annual Meeting of the National Microfilm Association in Chicago's Hotel Sherman April 4-6. Their objective was to find out how "Systems and Standards" would usher in a new era in microreproduction.

The keynote speaker was Richard Leghorn of Itek who spoke on "The Impact of Science and Technology on Information Systems." Reviewing the changes that have taken place in microreproduction, he showed that the emphasis has shifted from space saving to publication and systems applications.

Four general sessions on logistics, engineering applications, retrieval and technology were supplemented by an alternate session on library and archival applications of microforms. More than thirty papers were given on subjects ranging over the whole spectrum of knowledge on microphotography. These were backed up by panels made up of more than fifty experts in the field.

For this reporter the highlights of the convention were four papers, one from each session. In a paper on "A Comparison between Contract Services and 'Do It Yourself' Programs," Frederic Luther gave a reasoned plan for deciding how to handle a potential microfilm job. Herman Henkle described the use of microfilm in the John Crerar Library and noted that plans for a new building only make provision for a five-year expansion in book stacks. The reason is an expectation that microrecording will help them keep within these bounds. The Central Intelligence Agency came out from under wraps in Paul Howerton's paper on "A Microfilm Unit Record System." He noted that for their application, CIA has not yet discovered an automated system that would do as fast a job as economically as manual access to Filmsort cards.

Thirty companies were represented in the sixty booths that made up the exhibit of equipment. A listing of the names represented would be a directory of the industry. Those showing new models at this convention were: Griscombe Products, N. B. Micro-jacket, Minnesota Mining and Manufacturing, Recordak, Microdealers, Microcard, Microseal, Frederic Luther and Andrews Paper.

At the closing luncheon it was reported the new slate of NMA officers would be Carl Nelson, President; D. W. McArthur, Vice President; and T. Wistar Brown, Treasurer. Next year's meeting was announced for Washington, D. C., at the Mayflower Hotel on April 25-27.



TOP THREE FRAMES show typical convention scenes. In fourth photo, Eugene Power is presenting the Pioneer Medal to Albert Boni. At table (L to R) are Joe Curtin, Mrs. Frederic Luther and Fremont Rider. At bottom, Murray Gristle of Griscombe is demonstrating company's new Filmcard reader.



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DACOM Is No Mystery

Here are the answers to your questions about the unit that marries microfilm to computer tapes.

Computer data conversion produces loads of hard copy. Often a one-shot necessity, the hard copy is difficult to handle for reference and storage. The DACOM system eliminates this problem by converting computer machine language recorded on magnetic tape to human language on microfilm omitting middle steps. It does this at speeds compatible with the computer.

DACOM stands for DATAscope Computer Output Microfilmer. Basically it consists of four main elements:

1. A magnetic tape drive which reads computer output tape at 15,000 characters per second.
2. A control unit, which decodes the tape data and selects the alphanumeric character to be displayed.
3. A display unit, which projects the desired character on a cathode ray display tube.
4. A camera which automatically records the display tube image on 16mm microfilm.

An important part of the system is the fact that the character generating plates in the control unit are interchangeable. Thus DACOM can convert magnetic tape signals to intelligible English or any other language, or even plot point graphs and record logic diagrams of electronic circuits. This interchangeability offers extensive application possibilities to business and industry. For example, banks could use the appropriate character plates to produce customer statements or corporate stock transfers. Other applications include premium billing and policy status records in the insurance industry; customer billing and history recording for public utilities; rendering of statements, etc. in retailing.

In operation DACOM can record a page of 64 lines of 126 characters

in approximately half-a-second; this adds up to 7,200 manuscript pages a second. Through a split-optical system the computer output data can be photographed with the desired background format (a statement, bill, accounting form, etc.) resulting in an optically combined microfilm image. This makes it practical to record large quantities of information, prepare statements, etc. as they are produced by EDP.

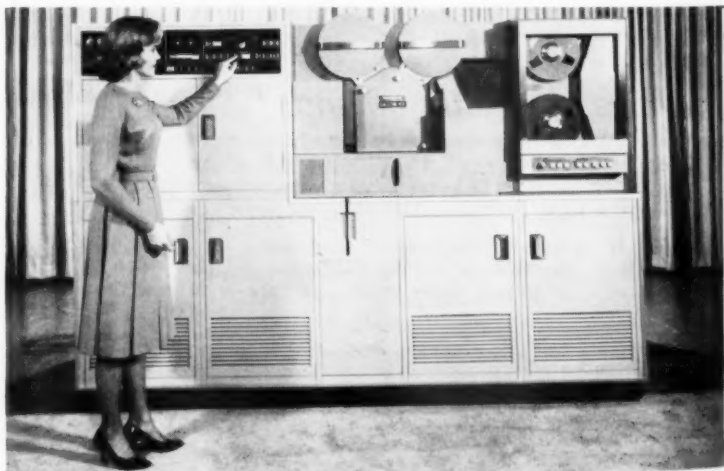
Complementing modern computer equipment, DACOM provides a unique readout — a form of printout that matches computer output speed. Even more exciting are promises of peripheral equipment forthcoming shortly that will make the unit a complete data processing system. These include devices for on-the-spot high-speed processing, for continuous or selective hard-copy facsimile production from the film, for high-speed duplicate film printing as well as fast information retrieval at visual film reference work stations.

The last-named already exists and

actually preceded DACOM. It is a self-loading microfilm magazine reader (Lodestar) which was developed for quick access to a parts list for a mail order house. A magazine of 100 feet of 16mm microfilm is dropped into the reader which finds the end of the film, threads it, cranks the film at high speed and then rewinds it on command. An automated lookup system, to enable the reader operator to have the precise image he needs within 15 seconds, is now being perfected.

Presently, standard processing systems can be used for DACOM's 16mm microfilm output since the film is the same as standard microfilm with a slight adjustment in spectral sensitivity to match the phosphorescence of the unit's cathode-ray display tube. The film can then be read on a 16mm reader and blownback by standard procedures.

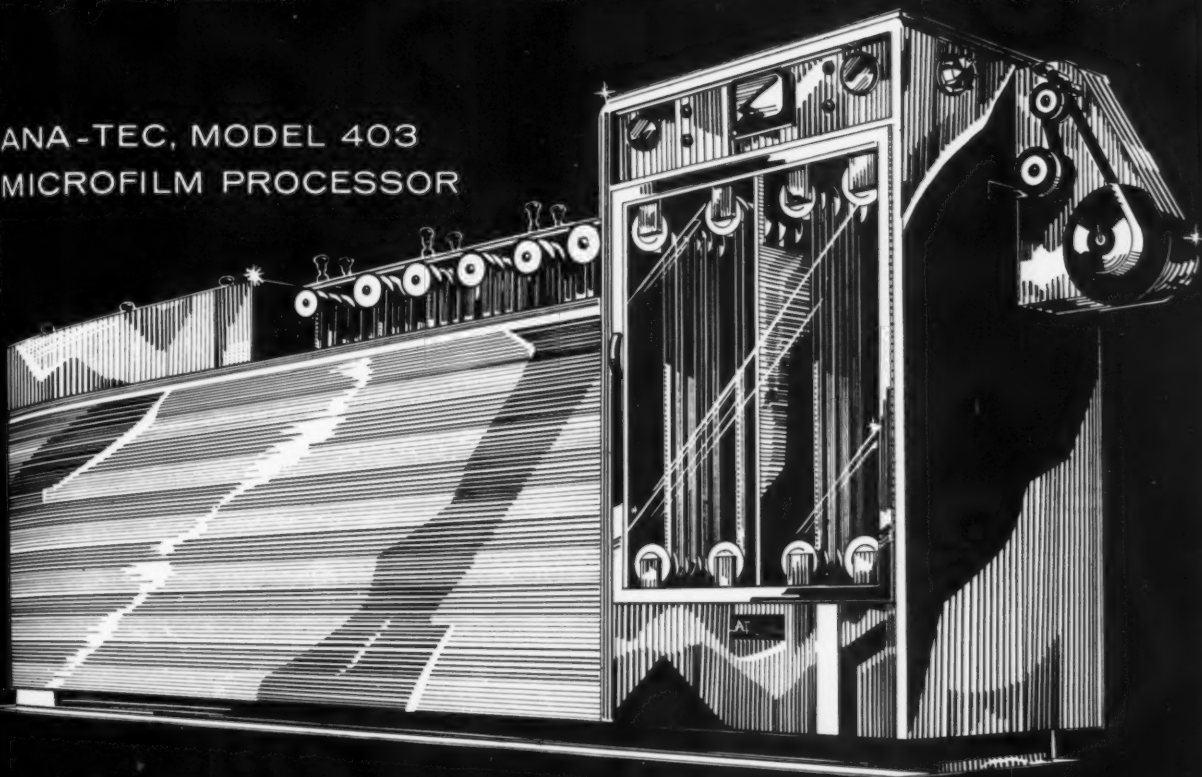
The price for all of this? DACOM's price tag is approximately \$300,000, not as steep as it sounds for the advantages it offers to major EDP systems users.



DACOM 101 seen above has controls at left, microfilm camera in center, and tape reader unit at right. Now commercially available, system is based on concepts originally designed for government applications.

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Stem To Stern Improvements

by **WALTER H. LACEY**, Supervisor
Microfilm Records Management
Title Insurance & Trust Co.

Enlarging staff and adding equipment isn't the only way to increase the productivity of a microfilm section. If you study your operation carefully you may uncover less expensive ways of doing the job.



AUTHOR (L) and Al Blakely, who heads the Shop Division, check one of the operations.

Over a year ago our microfilm section's system at the Title Insurance & Trust Company underwent a complete analysis. Existing procedures were found to be standard and doing an adequate job but no more. To improve the system we decided that these procedures had to be revised, some eliminated.

Since then, retaining the same twelve employee staff, overall production has increased by 300 per cent, microfilm reproduction quality greatly improved, and the staff's morale and efficiency are up.

Initially, an inventory was made of equipment and supplies on hand to determine what repairs or improvements were required. Job descriptions written by staff mem-

bers were analyzed and used as source material for revising procedures in the section.

With the knowledge of our capacity, we determined ways to consolidate the photo reproduction work, cut out duplication of effort, and improve the use of equipment. Facilities were shared and equipment exchanged to cut the operating time and costs.

Clean Start

The actual microfilming procedure was revised from beginning to end. At the start of each 100-foot roll of film used, a pre-numbered target is shot giving the roll number, date, operator, camera, remarks and the company name and branch. The corresponding box or can is marked with the same number as the film. Each roll also contains a Bureau of Standards Target, a plain white sheet used as a grey scale, and a description sheet, indicating type of material photographed and giving a complete record of the contents.

A numbered description sheet is prepared for each microfilm project, covering each step required and filed numerically in a project book for the staff's reference.

Film and filing space saving, about 25 per cent, was achieved by reducing frame spacing to a minimum and filming some materials, such as 8½ x 11" sheets, vertically.

For safety film disposal, a Shred-master paper cutter is used with a special blade replacement to cut ¼" microfilm strips.

When filming 16 x 18" book pages we used transparent plastic sheets to hold them flat. Unlike glass, reflections of scratches on plastic do not affect the image.

The tediousness of photographing one side printed sheets with a plan-

etary camera prompted us to experiment with a flow camera equipped with a vacuum feeder. This experiment resulted in a 30 per cent output increase.

Two Remington Rand Aristocrat Flow Cameras were installed with two Davidson and Addressograph Multigraph feeders. The feeders, operating separately, feed the cameras 3" x 5" to 11" x 15" material at a speed of 2000 to 5000 sheets per hour.

Reshooting has been decreased by using an automatic control register enabling the operator to view single sheets as they are fed into the camera. This has cut final viewing and editing by more than 50 per cent.

Uniform reduction standards were established at 16X and 20X on most films. This simplifies lens changing requirements on new equipment.

After the film has been processed, it is passed through a densitometer to maintain better quality control on our cameras.

The first step before storing micro-

ROLL NO.

DATE

OPERATOR

CAMERA

REMARKS

TITLE INSURANCE & TRUST CO.

TARGET CARD is shot at start of each 100 foot roll of microfilm.

After researching microfilm facilities Title Insurance and Trust found numerous innovations were called for.

crofilms is butt-end splicing with Presto-Splicer heat units, which make a smooth joint connection on rolls. This prevents bulges in rolls. Then the film is spooled on 1000-foot rolls instead of 100-foot rolls, cutting down on labor and vault storage costs.

The reproduction of diazo film from microfilm, for storage and use copies, has been increased to 33,000 feet per day by installing an electronic control on the Ozalid Model "J" drive mechanism. A deionization unit was also installed on the water circulation system which gives longer lamp life and better light.

Red Diazo Film

In photo takeoff reproduction from the 3M Model 100 reader-printer, we use a red diazo film which reproduces in two to three seconds as against eight to twelve seconds for the standard black film. The red film, however, does satisfactory work on original material only, not on carbon copies.

In filming material prior to dry print reproduction, we used an overhead 35mm camera specially built by the Microfilm Co. of California. The main advantage of the camera was in its use of regular light bulbs enclosed in a frame and thus shielded from the operator. A small indicator also gave density background, light reading and finger tip control. These items replaced the outrigger type lights and control panel of the ordinary planetary camera.

With the assistance received from microfilm specialists and companies in our area, we have in just over a year attained unexpected goals. Furthermore, the microfilm section staff has shown an intense interest in all the speed and quality advances effected.



OPERATOR in foreground reads density of processed microfilm roll. Second operator uses Presto Splicer unit. Electric power rewind units simplify their work.



OZALID MODEL J in operation. Operator reaches for electronic control switch to regulate speed of machine for diazo film reproduction.



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Bureau of Public Debt.

Solve your office's paperwork problem by eliminating paper! This suggestion is not an idle remark but a practical solution. It is done by converting paper operations to microfilm and magnetic tape.

An installation where this has been done successfully is the Bureau of Public Debt, Parkersburg, West Virginia. Here eight hundred miles of microfilm and magnetic tape control an indestructible record of purchases and redemptions of U. S. Series E Savings Bonds, of the card type first issued October 1, 1957.

This paperless, automated office stores 146 million pieces of information yearly on film and tape to provide both a balanced file of savings bond transactions and an ownership register for the one-out-of-five United States citizens holding such bonds.

The film in this office, which has few file cabinets, is the ownership register. Magnetic tape, stored on aluminum shelves in a temperature and humidity controlled computer room, is both a balancer of transactions and a locator for Series E bonds bought since the card system was begun and the bureau automated its operation.

Both the files of film and tape support the U. S. Treasury Department's pledge to replace any bonds that are lost, destroyed as in a fire, or stolen. Ownership of such bonds cannot be transferred or pledged. They are registered in an individual's name, in co-ownership such as husband and wife, or in the name of an individual and payable on death to a beneficiary.

The magnetic tape balances the file for the purchases of about 89 million E bonds yearly from 21,000 issuing agents. Such bonds are sold in many parts of the world to American citizens. In addition, last year some 19,000 paying centers redeemed about 55 million of the card-type bonds. Once more, magnetic tape recorded these transactions.

After it balances the file, the magnetic tape becomes a locator of bond transactions. It keeps two types of files for the bureau. One file is numerical — a master file of the issued bond and its subsequent transactions.



CARDS converted to microfilm provide an ownership register.



DIGITAL data converted to magnetic tape is used to balance accounts.

The other file is alphabetical and geographical used to locate bonds by name and address of the person who bought or cashed in the bond.

The stub — or carbon copy record of the issued bond — and the cashed-in bond are filed on microfilm. After about a year's retention of the record, both the stub and the bond are shredded and sold as waste paper at the rate of a carload a week, under supervision of the Treasury Department. The sole record of the transaction remains on the microfilm and magnetic tape.

In addition to providing accounting balances, the combination of microfilm and magnetic tape makes it possible to detect processing errors, locate discrepancies and answer inquiries as part of the automated routines. Whenever a proof of the stub or bond containing the error or discrepancy is needed, copies are produced in a few seconds by a 3M "Filmac 100" Reader-Printer, eliminating the possibility of error in manual transcriptions.

The automated routine begins with the receipt of stubs and cashed-in bonds which are funneled in control batches from the issuing and paying agents through 20 Federal Reserve banks and branches. These credit and debit the Treasury Department's account of bond transactions.

Each control batch has a summary card showing the total amount of bonds that have been issued or redeemed, the agent's code, the Federal Reserve bank or branch, and the transfer date to the treasury account. Behind this control card are the detail cards of the sales or redemptions.

The next step is to microfilm the bonds on 16mm Recordak Reliant cameras, equipped with special feeders for IBM cards. The stubs are filmed at a 28-to-1 reduction ratio; the bonds at 32-to-1, and side-by-side to show both the front and the back sides. The backs of the bonds carry the signature of the person who cashed them.

continued on page 42



PRINT of a filmed bond transaction provides proof of ownership.



New ideas in punched

How your IBM supplies specialist helps you find ways to cut your punched card costs

How can a redesigned punched card improve your data processing efficiency?

Your IBM supplies specialist can tell you...and show you ways to redesign your cards to give you new data processing economies.

Your IBM supplies specialist is a man with extensive training in data processing supplies. That's why

he is uniquely qualified to help you match the punched card to the job that you want to do.

There's virtually no limit to the practical cost-saving ideas he offers you for:

SAMPLE CARD SELECTION—You can look over thousands of card formats, filed by industry and application. One or more of these may provide the key to the card design problem that's troubling you.

DESIGN ASSISTANCE—Our designers are at your service through a nationwide network of Card Design Cen-

CUSTOMER METHODS MEN AND AN IBM SUPPLIES SPECIALIST (left) study a stock card form book and flow charts. By matching the card to the job, you get the most out of your data processing equipment.



THE RIGHT DESIGN. Thousands of stock, special, and continuous card forms, books and sets are on file at IBM Card Sample Centers. One of them might solve your problem.



NEED A SPECIAL CARD? IBM research has developed scented-ink, water-resistant, magnetic-ink-encoded cards—and a host of others, including cards printed in full color.



CREATIVE SKILLS AT YOUR SERVICE. At thirteen IBM Design Centers across the country, experts create cards to meet your specific needs, and bring new efficiency to your data processing operation.

card design

ters. These experts can help you to develop your own card ideas, to apply existing formats, or to create new, exclusive designs for solving your problems.

EDUCATION—Seminars at our customer education centers, informative literature and plant tours keep you up-to-date on the latest techniques in designing, using and caring for your IBM cards.

FAST CARD DELIVERY—Whether your order is large or small, you get fast service from nationwide manu-

facturing facilities. IBM gives you prompt service, too, on card designs and card proofs.

Your IBM supplies specialist is the man with the complete punched card story. Let him help you with solutions to your card problems.

IBM® DATA PROCESSING

Circle No. 512 on Post Card



Words Tell Computer Shapes of Parts to Cut

New language cuts time and tooling costs.

Early last month a solid-state IBM 7090 computer produced instructions that were converted to perforated tape and which enabled a continuous-path milling machine at the United Aircraft Corporation plant in East Hartford, Conn., to produce a complex helicopter gearbox cover. On the surface this sounds like a simple statement; tape-controlled machines are not new to industry.

The difference was that in this case the user described the surfaces of the three-dimensional shape to be milled, rather than each path the tool had to follow to machine the part, and left it to the computer to generate these tool paths. All it had to go from was a simple description fed into it in English-like terms.

Behind this rather remarkable feat was AUTOPROMPT (AUTO-

matic PROgramming of Machine Tools), a numeric control system worked out jointly by IBM and United Aircraft. The key to the system is a concise, English-like language which enables a part-programmer, working from an engineering drawing, to describe the surfaces to be milled in familiar shop terminology. Using this language, the part-programmer describes each geometric surface of the shape to be machined, defines the relationships of these surfaces to each other and specifies the machining needs.

For example, the bowl-shaped surface of a part might be described as follows in AUTOPROMPT language, "Bowl Sphere, Inside/Center (0, 0, 0) radius (1.75)."

The part description, handwritten on an AUTOPROMPT coding sheet,

then is punched into cards. The cards are fed into the computer which automatically generates the tool travel instructions for each surface.

These instructions are recorded by the computer on magnetic tape. When required this is converted to perforated tape or other media appropriate for input to a machine director, which numerically controls the operation of the machine tool.

Thus, the system hurdles the main barrier to wider use of numerically controlled machine tools — the practical difficulties involved in programming a tool to cut a desired part. Previously, the part-programmer had to specify each individual tool pass to the computer and take into consideration the tolerances required. This tedious procedure is time-consuming and can result in compromises in tolerance, machine efficiency and even in actual part design.

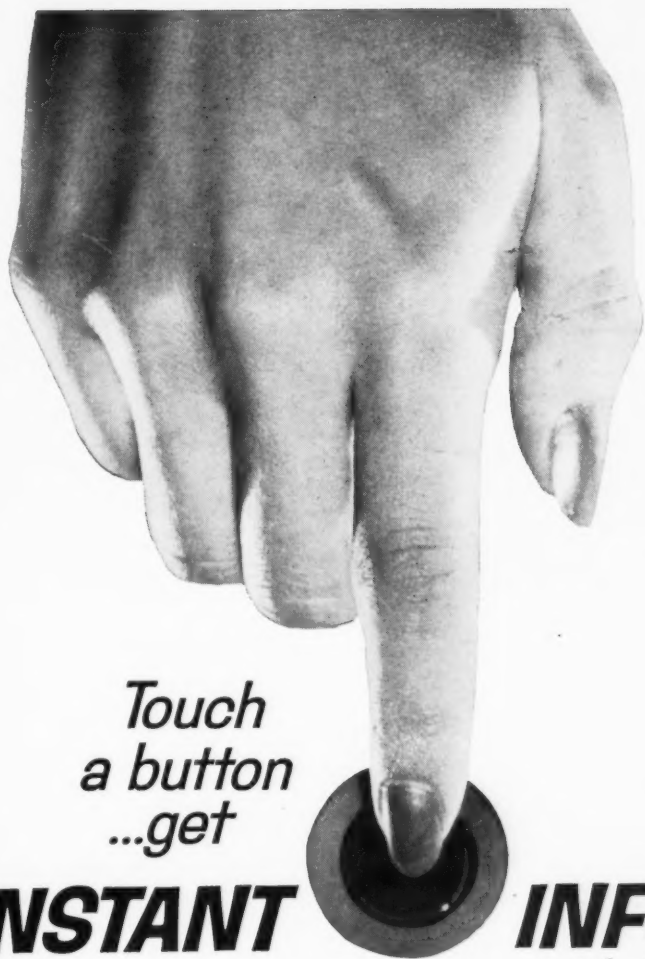
By simplifying the human effort needed, the system makes numerical control automation feasible in applications where it previously was impractical as in limited-run production.

In effect, what does it mean? First and obviously it cuts both lead and production time over conventional methods. It does this by cutting programming time and by putting numeric control to new uses.

In addition it provides greater freedom in original design and engineering of parts since designers no longer have to compromise to avoid expensive hand-tooling. Similarly, parts for a development model may be produced more quickly and in a form much closer to that planned for the production model.

Most obvious of all, it can mean an expansion of numerical control to small and medium-size tool shops and a general lowering of production costs by cutting the tooling costs for short-runs.

The system is expected to be most widely applied throughout the metalworking industry and also in aircraft, missiles and automobiles. This includes manufacturers with their own computers and smaller machine shops who use service center facilities. □



*Touch
a button
...get*

INSTANT INFORMATION!

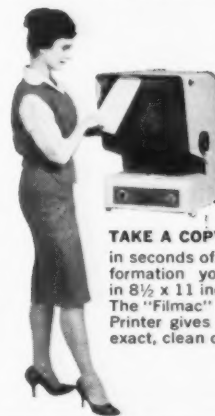
BRAND

with 3M Microfilm Products

Records, facts, figures—any information is available in seconds at the touch of a button with 3M Microfilm Products. 3M makes it so easy to put the magic of microfilm to work cutting the costs of paperwork—speeding business communications—saving valuable space—in short, making filmwork easier, faster, less costly than paperwork. Find out now how you can put microfilm to work—get instant information—with



TAKE A LOOK—
at the enlarged microfilmed information on the bright viewing screen of the THERMO-FAX "Filmac" Reader-Printer. Touch a button and...



TAKE A COPY—
in seconds of any information you want in 8½ x 11 inch size. The "Filmac" Reader-Printer gives you an exact, clean copy.

3M MICROFILM
BRAND PRODUCTS

MINNESOTA MINING AND MANUFACTURING COMPANY
ST. PAUL 6, MINN. ... WHERE RESEARCH IS THE KEY TO TOMORROW

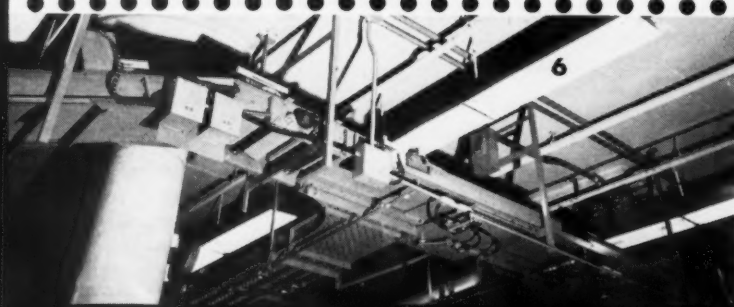


MINNESOTA MINING AND MANUFACTURING COMPANY
DEPT. FBZ-71 ST. PAUL 6, MINNESOTA

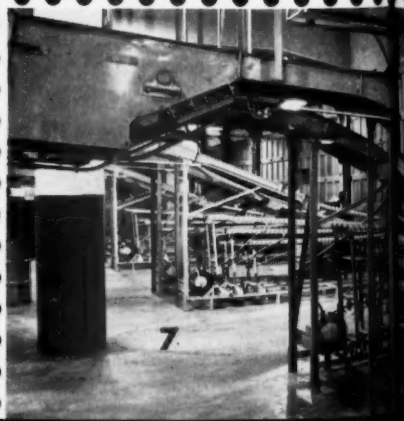
Please send me facts about how I can get Instant Information with 3M Microfilm Products.

Name _____
Title _____
Company _____
Address _____
City _____ Zone _____ State _____

Circle No. 518 on Post Card



Customer orders for toilet articles are processed in half-a-day less at Colgate-Palmolive's Kansas City distribution center since the introduction of a punch card system which controls storage racks and conveyors, and loads truck-trailers automatically.



Punch Cards Speed Soap Distribution

Bottleneck — orders from wholesalers and supermarket chains for goods already in the warehouses are retarded by slow order-filling procedures. Demand and supply converge at the warehouse and sit there awaiting slow, costly, inefficient handling.

Ironically, automation in production and communications has played a part getting both orders and goods to this warehouse. Why not automate here?

Colgate-Palmolive answered this question over a year ago when it automated its Kansas City, Kansas, distribution center. Receiving the company's toilet articles, the center distributes these throughout a wide Midwest area.

Punch-card operated, its new system combines an electronic control unit and conveyors to select and move up to 15,000 cases in a 7½ hour working day from storing rack to waiting truck-trailer. This operation handles 80 per cent of item movement that was previously all hand-picked. The remaining 20 per cent is hand-picked by the control unit's operator.

The 80 per cent represents 72 most requested items out of the 250 items stored in the warehouse. Monthly revisions of these most active items require only about two hours to change stock on racks.

Operation of the system is initiated across the river in Kansas City, Missouri, where salesmen's orders are collected at a central office. These orders are transferred to a

printed form which serves as a shipping order, bill of lading and memorandum of shipment, with one part, a paper tab, to be used as a stencil in labeling each case in the order.

Simultaneously the accounting machine prepares a punched card for each item ordered, with invoice and customer number, date, stock number, quantity, amount, salesman, trading area and other information included. Forms and cards are forwarded daily to the warehouse for processing.

Processing will vary with the quantity ordered. If a pallet-load is ordered, the automatic system is by-passed and a second card prepared. Spill-overs will require a third card to handle the remainder of the order through the system.

The punched cards are fed into a General Electric Directo-Matic control unit that reads, sorts and memorizes at a rate of 100 cards per minute. The unit signals the racks what items to release, when to release, and how many cases onto the conveyor belt.

The items are shelved on 72 racks, actually gravity conveyors continually fed from the rear. Separated in three levels of 24 conveyors each, the racks are met in front by three conveyor belts, one at each level. At a deflecting point, the belts are emptied alternatively left and right to order accumulator belts.

Concurrently, the slower-moving items, hand-picked by the control unit operator, are carried on a third

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- (1) More than 50 cases a minute feed onto conveyors from 3-tiered, 24-lane storage racks.
- (2) Cases accumulate at assembly area for each order. Two lanes at far right are for manually picked items and tote box.
- (3) Card reader transmits orders releasing cartons, reading 100 cards per minute.
- (4) Pallet loads for an order pass directly to truck dock, by-passing conveyors.
- (5) Cornering unit aligns addressed cases on conveyor leading to overhead conveyor (6) where they are deflected to pre-selected truck dock by photoelectric cells which "read" the coded tote box.
- (7) Driver-controlled telescoping conveyors carry cases into truck.

"It's The Form That Counts"

When Designing New Forms

You may save your company money by suggesting how they can revise old purchase order and other forms that no longer do the job.

by F. J. WOHN, *President*
Associated Business Systems, Inc.
Houston, Texas

Department supervisors find it necessary at times to design, redesign or combine forms to keep up with their organization's changing systems. Redesign of forms may also be necessary to improve control, simplify writing and handling operations, and provide more accurate information in the existing systems.

If this assignment is one you encounter, there are thirteen basic principles that can serve as a gauge to check forms in present use and as a guide designing new forms. Before changing or adding forms, however, find out about the requirements of the specific department involved, and, those also of related departments. This can save valuable time later and avoid duplication.

Watch Your Paper

When designing forms, special chart paper should be used. The chart paper is usually marked off for 10 characters per horizontal inch — 6 lines single-spaced in one vertical inch for machine applications and in 1/4" spacing for hand-written applications. A form which is to be processed by both machine and handwriting should be designed with 1/3" vertical spacing to accommodate double spacing on the machine.

1. Determine *WHO* will want *WHAT* information *WHEN* and *WHY*.

The number of copies required depends on *WHO* wants it and *WHEN*. One copy will be sufficient for two departments if the second can wait for the copy to be routed through the first department.

A study of *WHY* a copy is routed

to a department can result in finding that the information is never used or is available on another record in the department.

WHAT information is necessary to determine the number of items to be included and the form's size? Design the form for the shortest and narrowest size possible to avoid costly long and unused portions. For example, a 7" or 8" long form can be processed through a machine in less time than an 8 1/2" or 11" form and requires only one fold to fit a standard size #10 envelope.

In determining the form's width, check the maximum number of type bars (or handwritten spaces) used and allow for just the required number of spaces. Eliminating unused

in the window area and the fold mark can be preprinted on the form. Window envelopes are available in both left side and right side windows, giving much leeway in designing the form. Copies to be returned to the originating source may have the name of the originating source preprinted to fit a window envelope for the convenience of the firm returning the copy.

3. Arrange the items to be filled in on the form in a logical sequence, and in relation to the various source records of the form for easiest and fastest transcription.

For example, a billing address and customer purchase order number will probably appear on one source record, and shipping informa-

Forms Checklist

- | | |
|---|--|
| • 1. Discover who needs what forms. | • 7. Is important data preprinted? |
| • 2. Will form fit a window envelope? | • 8. Preprint data outside typing area? |
| • 3. Items in logical sequence? | • 9. Use boxed spaces for items. |
| • 4. Can data be gotten easily from it? | • 10. Design spaces to use minimum tabs. |
| • 5. Writing flow from left to right? | • 11. Use color-coding for each section. |
| • 6. Filing reference easily spotted? | • 12. Are carbons efficient? |

space cuts paper cost and operator time.

By rearranging headings, advertising material, instructions, and other preprinted information, and by the use of back printing, it is sometimes possible to reduce both the length and width of a form by as much as 1 1/2 or 3 inches.

2. Design the form for a window envelope if one can be used.

The position of the first type bar

tion items will be on another source record.

4. Arrange the sequence of items for efficient use as a source record for subsequent forms.

This is very important in designing a form from which key punch operators in the tabulating department will obtain information.

5. Arrange the items so that the flow of writing is from the left side

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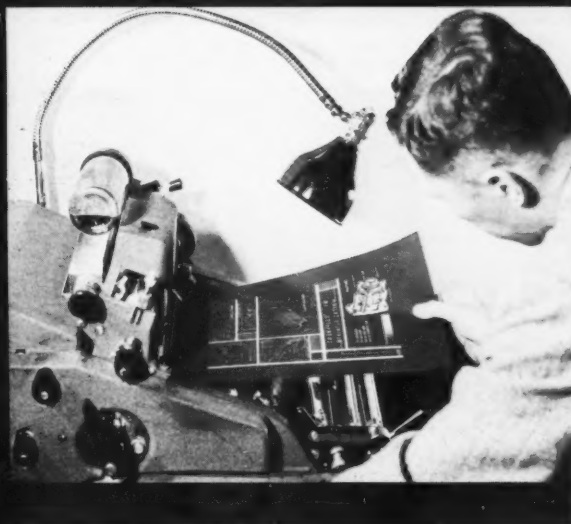
**Offset plates on CRONAFLEX® permit simplified,
low cost method of miniaturization retrieval**

Offset printing plates made of versatile Du Pont CRONAFLEX Projection Film are making possible high-speed efficiency with considerable cost savings in miniaturization retrieval. In this system, projection is made directly from the miniature negative onto CRONAFLEX Projection Film to the desired plate size. Developing and etching follow, and in less than ten minutes a plate is ready. Savings can be realized over conventional retrieval methods when only a few copies are needed.

Two important reasons help explain the success of CRONAFLEX in this novel application: its high contrast and projection speed which assure sharp, accurate prints of uniform quality even from poor negatives, and the outstanding durability of its rugged CRONAR® polyester photographic film base.

Du Pont also makes stable and durable CRONAR Ortho A Litho Film in 105 mm roll size for microfilming.

CRONAFLEX Projection Film is just one of Du Pont's line of engineering reproduction and drafting films. For information describing this new method in detail, plus information on the other CRONAFLEX films, clip and mail the coupon today.



Offset plate made in minutes with CRONAFLEX is mounted on press ready to run. Image additions and deletions can be made quickly and easily.

E. I. du Pont de Nemours & Co. (Inc.)
Photo Products Department SM-7
Wilmington 98, Delaware

Please send me, without obligation:

- ☐ Detailed information on this new method of miniaturization retrieval.
☐ Facts on the full line of CRONAFLEX engineering reproduction and drafting films.

Name _____

Firm _____

Street _____

City _____ Zone _____ State _____



Better Things for Better Living

. . . through Chemistry



OPERATOR is shown tearing off portion of repeat order tape corresponding to the production order just typed from sales order.



REPEAT order tape is filed in a tub file by production order number. The tape is fed back into the Flexowriter for automatic typing.



INVOICE tape and original copy of production order are filed numerically. Tape is used for automatic invoice typing.

Taped Orders And Paperwork

American Tag, who solves other firms' problems

"Paper tape saves paperwork for a paper printer." This phrase conveniently summarizes the advantages American Tag Company has gained as a result of a new order service and invoicing system at its Belleville, N. J., headquarters.

From this system the company looks for a reduction in the amount of paperwork salesmen will have to do in writing and editing "repeat" orders, faster delivery dates, and more complete, readily available accounting and sales reports. Management looks for quick monthly knowledge of the sales volume and profitability of each product in the line and resulting savings in "re-orders". Here is the background of the new system which is expected to accomplish all of this.

American Tag, with operations both in Belleville and Chicago, Illinois, is one of the nation's largest producers of tags, labels, decals and packaging specialties. The company also develops systems and appropriate printed "tools" for certain phases of its customers' in-plant "paperwork" problems. American Tag had realized for some time, however, that its own office system needed improvement. With a substantially increased volume of business, manual processing of office forms was getting out of hand. Clerical costs were increasing at an alarming rate, as was the danger of errors. Sales expenses were related to the problem, and had to be kept down.

With thorough and methodical techniques, American Tag studied its entire paper-processing routines. Two important facts were uncovered:

- 1) Approximately 70 per cent of customers' orders were "partial repeat".
- 2) 45 per cent were "exact repeats".

These figures provide the real stimulus for a consideration of automation, and, on the philosophy that even a doctor calls in a specialist, the company decided it needed advice from a "specialist" in office systems and related forms.

Early in 1960, Bob Swett, president, Bill Miller, controller, and Bob Read, sales promotions manager, began talking with business machine manufacturers and system-and-forms specialists. Data processing systems of companies with similar needs were also carefully studied. Based on these studies, and on the recommendations of several authorities in the forms and machine fields, a decision was made to build an integrated data processing system around a Friden Flexowriter "Programmable".

American Business Systems, Inc., Philadelphia, Pa.,

Save Time on 'Repeats'

problems, recently looked in its own backyard.

was selected to survey the situation. Every piece of paperwork pertinent to the company's order writing and invoicing operations was dissected and analyzed.

Steps were planned for the complete programming of paperwork to operate within the Flexowriter system. In analyzing order and invoicing procedures alone, it was found necessary to "program" over 500 steps. Working backward from the desired end result, American Tag went through weeks of trial-and-error sessions until a basic system—requiring only four multi-purpose carbon-interleaved "Snap-Set" forms—was finally established.

The most complex form—yet one that is completed in one quick, easy operation—is a twelve-part "Snap-Set" that performs just about every function in the order writing operation.

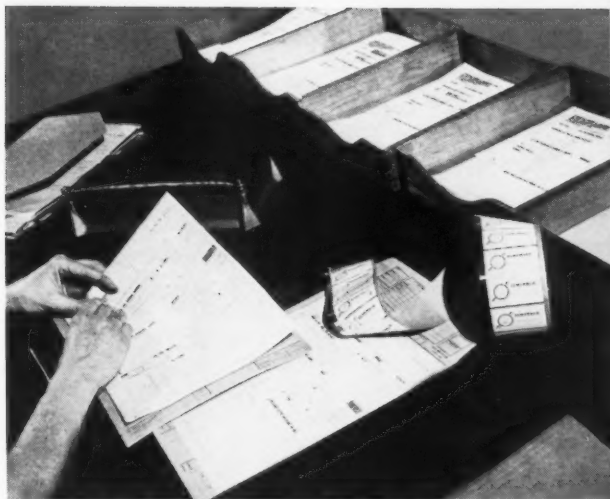
Briefly, the parts, in three basic groups of four parts each, are in this end-use order:

- 1) The original copy of the order for American Tag's billing department. This includes all processing information.
A salesman's acknowledgment, which is a true copy of the order.
An index copy for sales department records.
- 2) A copy for the production department which includes information pertinent to the manufacturing operation.
A factory office copy which is identical to the second copy.
A scheduling copy for the expeditor.
A material record copy for the materials control department and the stock room.
- 3) The original copy of the bill of lading.
A trucker's shipping memo with a perforated stub to serve as a packing list.
A memo copy of the bill of lading.
A salesman's shipping notice.

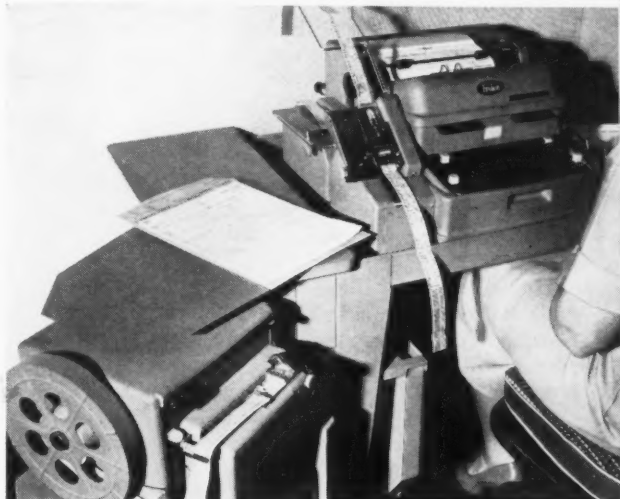
The new forms were experimented with for a period of weeks to assure that any "bugs" had been removed.

The next step involved installation of the Flexowriter. Similar to an electric typewriter, the machine has devices coupled to it that punch "memory" into paper tapes as the initial order is being typed. Later the unit "reads" this memory back. In handling "exact repeat" orders, a clerk now merely feeds tape, prepared simultaneously with the typing of the customer's initial order, into the equipment. From this tape, the machine automatically types out the repeat order and,

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SEPARATED 12-part production order form is distributed, a gummed copy being sent to the factory with sample tag in a job jacket.



THE JOB having been shipped, the invoice tape is inserted into Flexowriter. Manual typing is required only for variable data.



SALES analysis tape is converted into a monthly sales report by salesman, customer and product category.

Paper Copying System Speeds Production

How Warren Wire reduced order processing snags.

Wanted: a simple, but effective, system of production control that would unblock a log jam of back orders and provide an accurate up-to-the minute check on orders in process.

Solution: systematic application of office copying techniques that have speeded up production of average orders by roughly 50 per cent — and gained similar savings in time and personnel.

That's the experience in a nutshell of the Warren Wire Company of Pownal, Vermont, one of the country's major producers of cable and wire and a leading supplier of aircraft cable for military and civilian use.

The company's busy aircraft cable department was often overburdened with orders, many of them labelled "Rush." As a result, its order-processing department was sorely taxed in attempting to keep up with delivery dates. Orders continued to pile up at the processing

desk instead of being expedited into the production line. An unwieldy, time-consuming system of handwriting many work tickets individually made it difficult to check work progress at any given time.

"We were constantly running into snags because each operation to be performed on the machines meant filling out a separate card by hand," explains Harvey Richard, Aircraft Department Expediter. "Any sizeable order was a fingerbreaker for our clerks and even the average order kept them writing most of the time. We had to check through reams of order sheets to find out how any order was progressing."

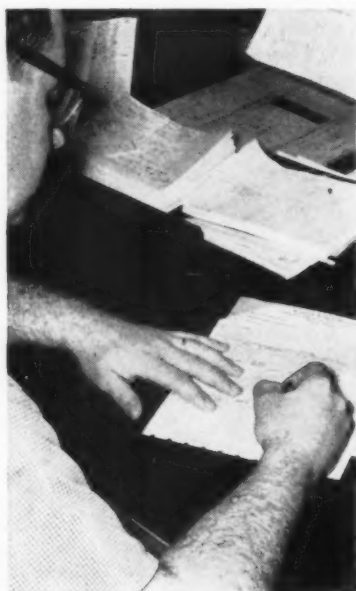
Rather than add more clerks to the processing department — and thereby add to the cost as well as confusion — the company turned to a Verifax Bantam Copier. This was tied in closely to a simplified but tailor-made order posting and filing system. Result? Within weeks after the new system was installed,

all back orders had been shipped out, new orders were being processed and shipped in less than a third of the time required previously and the number of processing personnel was actually reduced by two-thirds.

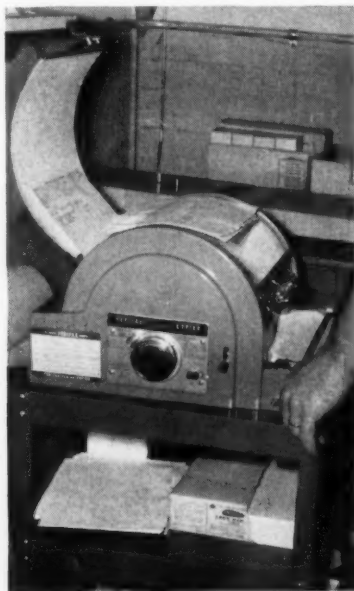
Conversion to the new system also enables Warren Wire to handle large orders more efficiently than it previously was able to handle average-size orders. Large orders are now easily broken down in several workable units without adding to paperwork that formerly would have swamped the order processing department. Instead of waiting for up to two days without action, customer requests are generally processed on the same day they are received — and sent out to production with a minimum of delay.

The result is a smooth-functioning production control system which has already paid for itself several times, in the year since it

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ORDER information tab fits on spec sheet.

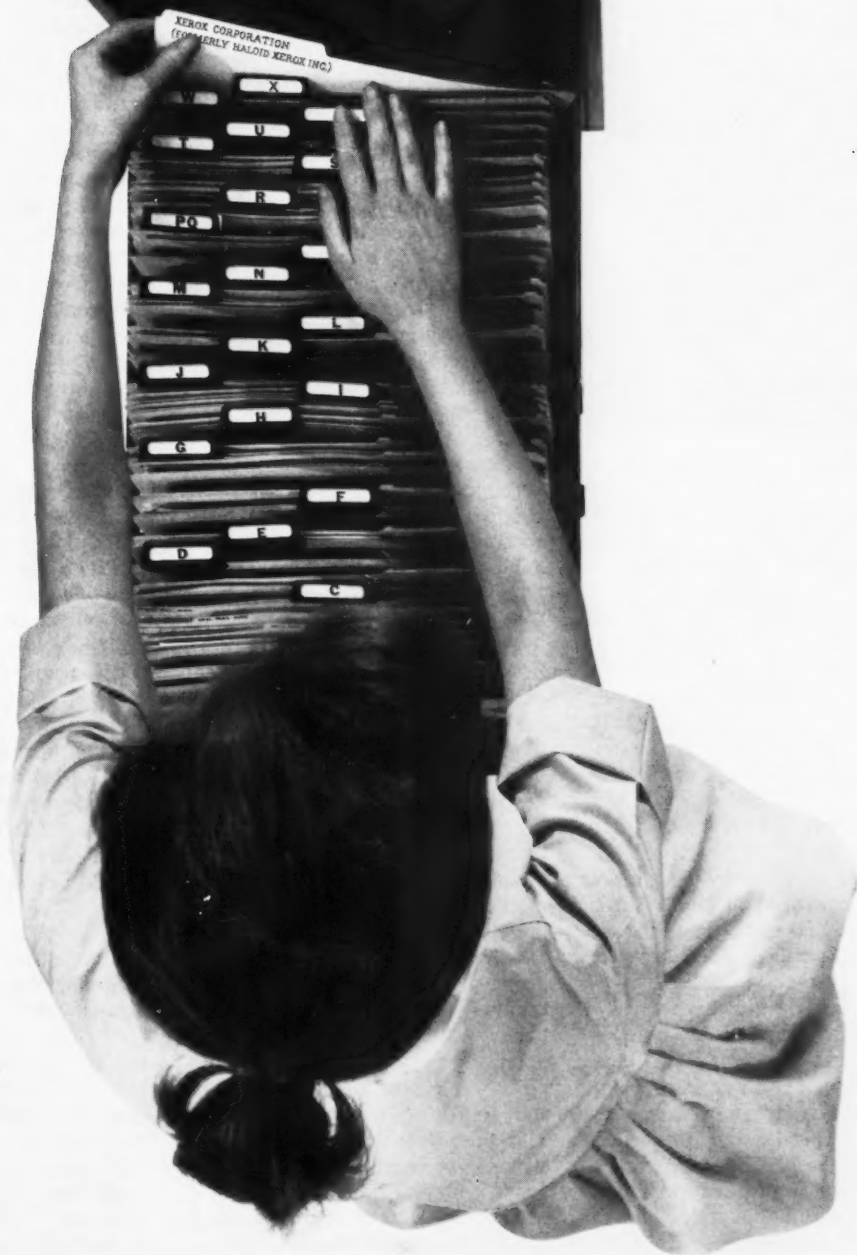


WORK sheet copies are run off from master.



WORK FOLDER's color signals rush of order.

now X marks
our spot



XEROX CORPORATION

On June 1 the name of our company changed from Haloid Xerox Inc. to XEROX CORPORATION.

Therefore, you will want to bring

your reference files up-to-date. Then, when you're looking for information on office copiers, high-speed continuous printers and other reproduction equipment, you will find it—under "X."

■ Why this curious name "Xerox"? The word is of classic origin and stems from the Greek *xeros*, meaning "dry." And *dry* describes, perhaps as well as one word can, the revolutionary process on which our copiers and printers operate. ■ The initial

"X" in all English words of ancient Greek origin is pronounced as a "Z." Hence, Xerox is pronounced **zerox** . . . but here we part company with all things ancient and Greek! ■ For the Xerox in our new corporate name stands for a modern, progressive, research-oriented company which, through exciting new products, is making its mark in the growing field of graphic communications. ■ In meeting the needs of modern business for better ways to record, condense, store, and recall the sheer mass of information, XEROX CORPORATION helps management to manage the future. For more information on our company, write XEROX CORPORATION, 20 Haloid Street, Rochester 3, New York.

WARREN WIRE

continued from page 36



was installed, in terms of speed, efficiency and operating cost. An important dividend is the noticeable improvement in customer relations and sales force morale.

"Under the previous system, it required an average one and one-half days to move an order into actual production," says Richards. "We had two clerks doing nothing but writing up production tickets, one ticket or card for each operation with a minimum of six operations per order. The average was more often nine to ten hand-written cards for each 5,000 feet of aircraft cable on order. Now we use only one person to fill out a single master card and make the necessary number of copies. The average order takes only 20 minutes to process."

Currently, when a cable order is sent from sales to production control, assistant expeditor Paul Bergeron immediately takes a pre-printed specification/production sheet, 8½" x 5½" in size, from a ready file and transfers necessary processing information to it by hand. "It would take longer to do it by typewriter," explains Bergeron, "and the office copier turns out very legible copies of the handwriting."

Specifications including code number, size, strand, and types of material are hand-written onto the master order sheet. If the order is for 10,000 feet or more, it is broken down into lots of 5,000 feet each. A separate order card is made out for each 5,000 feet.

At the same time, Bergeron

makes out a 2" x 3½" tab, filling in the customer's name, order number, number of feet, order delivery date and color. The tab is then slipped into a slot on the master production sheet.

A set of photo-exact copies is then made up on the photocopier for each 5,000 foot lot. The number of copies varies according to the number of operations required in actual production. Thus, an order for 20,000 feet would require four sets of six or more copies. Copies reproduce information on the slotted tabs as if they were part of the production sheet.

Use of the separate tab instead of a single complete production sheet enables Bergeron to make changes or additions to any order without the necessity of filling out a new set of work tickets. It also facilitates a quick check of order specifications.

After copying, each set of work tickets is placed in a transparent acetate folder. The master sheet has been returned to the pending file. As soon as the order is scheduled by the expeditor, it is taken to the production line and placed on a hook adjacent to the appropriate machine.

Since the work tickets have been placed inside the folder in operational order, the machine operator merely checks the top sheet he sees inside the folder. When that operation is finished, the worker removes the top sheet from the folder, annotates it and drops it into his pick-up box. He then forwards the work and folder to the next operator. This procedure is followed through all machine operations until the order is completed.

Each morning Bergeron collects all completed work sheets at the individual stations, sorts them numerically and returns them to the order-processing department. Here he again transfers all work-completed information to a single customer record card in a VisiRecord file. Customer cards are filed numerically, according to order number, one card per order. When the order is completed, information is then forwarded to the customer's master card in the engineering department.

All costing is handled from this department.

Since each order is numbered, its progress may be checked regularly in the VisiRecord file. The sales department may refer to its own file for an order number, then call order processing where order status may be read quickly. Under the previous system, many cards had to be checked individually before work progress could be verified.

After completed work information is transferred to the customer record file, copies are also sent to stock, inspection and shipping to provide a triple check along the line. Original specification/production sheets are forwarded to the central IBM department where information is punched on master cards and the original sheets filed by date and number. These may be rechecked at any time.

On extremely large orders in the neighborhood of 100,000 feet, where handling on the basis of 5,000 foot lots would be cumbersome, orders are broken down into 10,000 foot lots. Thus an order for 200,000 feet requiring six operations would be broken into twenty 10,000 foot lots, each requiring six work tickets for a total of 120 tickets.

In this case, the master sheet is used to transfer information to a Verifax offset master and the 120 copies are run off on an offset duplicator.

"Before we installed the Verifax copier, we were lucky to process four or five average orders a day," says Richards. "A large order of 100,000 feet or so could take up the entire day in just processing. Now we can handle easily as many as a dozen orders per day. If needed, we could handle two dozen daily."

Previously, an average order of 5,000 feet took 10 days from the day of receipt in sales to shipping. Warren Wire Company's new order-processing system has speeded this up to an average six days or less. No longer is the production control department plagued with an increasing backlog of old orders or the heavy paperwork which accompanied these backlogs. □

AMERICAN TAG

continued from page 35

at the same time, prepares another by-product tape which is later used for automatic typing of the invoice. Still another tape, the product of the invoice typing operation, is used in the preparation of sales statistics.

For example, after one of the twelve-part "Snap-Set" forms has been inserted into the machine, all information that is to remain standard on future repeat orders is programmed to punch automatically and simultaneously into a pink, "repeat order" tape. Upon receipt of the repeat order, this tape is used to process all standard information, automatically. All the operator has to do is insert such variables as date, quantity, etc.

At the same time that the pink tape is prepared, another tape is punched — this one yellow. Later, when a shipping notice is received from the factory, the tape is used to automatically type the invoice for that order. Again, all the operator has to do is insert variables such as date, method of shipment, etc.

Sales Reports

A third tape, the by-product of the invoice typing operation, provides the means for preparing sales reports. Maintaining a complete record of the entire day's orders in running form, it makes possible rapid statistical sales analysis . . . an operation that used to take up a month's time.

Use of the equipment by clerical help proved an easy transition. "Results were immediate," says Bob Read. "We've already noticed a fast reduction in those clerical costs involved with processing invoices and orders. Based on efficiencies realized to date, we expect a 20 per cent savings in order-writing and invoicing time."

"We're very pleased," concludes Mr. Swett, "with our plunge into automation. I might add that this is part of a long-range program, by which we intend to advance our operation to a degree of efficiency that will serve as a standard for the entire industry." ☐

A VITAL SERVICE

for the Microphotographic Industry

The National Microfilm Association was organized in 1943 and subsequently incorporated in the State of Michigan as a non-profit Corporation. Its purposes are to advance the interests of the micro-reproduction industry by providing a channel of communication for producers of equipment and supplies, service companies and for users whether individuals or companies. Through its educational program, the Association has worked to stabilize and improve technical production and use of microphotography, and to keep producers and users alike fully abreast of latest developments. Membership in the Association is open to all corporate groups and individuals interested in the general field. Inquiries should be directed to:

Executive Secretary

NATIONAL MICROFILM ASSOCIATION

P. O. Box 386

Annapolis, Maryland



Tear off and mail



NATIONAL MICROFILM ASSOCIATION

P. O. Box 386

Annapolis, Md.

Gentlemen:

Please send, without obligation to me, complete information about your association.

I would also like to receive a FREE copy of the N. M. A. Handbook.

Company Name

Your name and title

Address

City and State

Yours for the Asking

New free literature on the latest developments in the data processing and microfilming fields. Each item listed has a key number. For more information circle that same number on the Readers Inquiry Card.

Microfilm Equipment

Portable Microfilmer 201

Recordak. Flyer on the Recordak portable microfilmer with a 20-to-1 reduction ratio.

Microfilming Information 202

The Gevaert Co. of America, Inc. 28 pp. booklet gives valuable information and technical data about microfilming.

Miniaturization Equipment 203

Keuffel & Esser Co. Information about two dynamic new developments in miniaturization of engineering drawings.

Microcard Copier 204

Microcard Reader Corp. Folder describes automatic Microcard Copier Type 1 operation and lists specs.

Film Processor 205

Pako Corp. Bulletin on Hansen Universal roll film processing system giving specs.

Filmcard Reader 206

E. Dietzgen Co. Spec sheet on Filmcard Reader Model 4365 for 35mm film mounted in EAM aperture cards.

Microfilm Televiser 207

General Precision, Inc. Information on GPL Microfilm Televiser which transmits microfilm or other images from central filing station to remote positions.

In-Plant Processing 208

Milsco Manufacturing Co. Four-page brochure with complete specs and step-by-step operational diagram of Cramer continuous film processor.

Microfilm Recorder 209

General Dynamics. Folder describes S-C 4020 computer readout Microfilm Recorder for graph plotting, data tabulation and alpha-numeric printing.

Microfilm Camera 210

Gard Electronics, Inc. Information on the Camera-Gard includes technique for combining a person's photo with check for bank teller's use.

Portable Camera 211

Photostat Corp. Literature available

on portable camera.

Microfilm Processing 212

Houston Fearless Corp. Brochure on the Microfilm Labmaster for microfilm processing.

Negative Microfilm 213

Bell & Howell. Particulars on new fine grain panchromatic negative film.

Paper Prints 214

Xerox Co. Booklet 1824 on benefits and operation of Copyflo 1824 printers which produce 18" x 24" prints in seconds on ordinary paper.

Splicing System 215

Hudson Photographic Industries. Free samples of Quik Splice tape and #AVMF illustrated catalog.

High Speed Film 216

Dynacolor Corp. Details and price list of new high-speed, fine grain film in 16-35mm sizes.

Portable Camera 217

Microdealers. Data on the Corvette, compact camera available through Microdealer affiliates.

Magazine Camera 218

Photo Devices. Data on the model 1088D, a 35mm microfilm camera with detachable take-up magazine, requiring only 8'6" ceiling clearance.

Intermix Splicer 219

Prestoseal Manufacturing Corp. Specs on Presto-Splicer designed to butt-weld any kind of film or tape and to intermix any of these materials.

The Golden Age 220

Remington Rand. Pop-out booklet which demonstrates full line of microfilm equipment and shows applications.

Processor 221

Oscar Fisher Co. Data on Processall Models G-6 and G-12, automatically processing film or paper 6" and 12" wide.

Computers and Accessories

Calculator 225

International Business Machines Corp.

Brochure presents a thorough control-panel summary of the low-cost Model B-1 609 transistorized calculator.

Paper Joiner 226

Tedlar Co. Spec and price sheet on the Joiner used to provide uninterrupted paper feeding for high-speed printing systems.

Floor Panels 227

Floating Floors, Inc. Booklet describing floor panels for computer rooms.

Monitoring System 228

Monitor Systems, Inc. Four-page bulletin describes 3600-point high-speed automatic monitor system for military or industrial applications.

EDP Programming Aid 229

Minneapolis-Honeywell. Brochure describing its EASY programming aid for the Honeywell 400 EDP system using symbolic tags and mnemonic codes.

Computer Systems 230

Remington Rand Univac. Booklet describing Solid-State Computer Systems with illustrations of component units.

Panel Accessories 231

Tech Panel Co. Brochure on such units as "Piggy Back," Dial Switch and Card Marker.

Computer Techniques 232

Bendix Computer Div. Report describing how advanced mathematical techniques and the G-20 computer are used to reduce costs, inventory and production waste.

Tape Storage 233

Monarch Metal Products, Inc. 18 pp. booklet on magnetic tape storage and handling equipment currently available.

CARDS AND FORMS

Formscard 236

Forms Inc. Data on continuous tab cards made without medial waste strips.

High-speed Stacker 237

Moore Business Forms, Inc. Spec sheet on Model 356 Forms Stacker for handling high-speed computer output.

Microcard System 238

Microseal Corp. Folder offers specs on aperture card system including mounting machine, diazo duplicator and verifier viewer.

Papers and Tapes 239

Paper Manufacturers Co. Booklet containing samples of "Perfection" communication papers.

Systems

Filing System 245

Microtape Systems. Data on a low cost filing system for business records.

Micro-Reproduction System 246

Minnesota Mining & Mfg. Co. Folder discusses the standards of the engineering data microreproduction system used by the Department of Defense.

EDP Indexing 247

G. J. Aigner Co. A 16-page booklet describing indexing products to facilitate data processing.

Automated Weighing 248

Exact Weight Scale Co. Reference manual on automatic weight sensing systems and applications to production and quality control.

Information Retrieval 249

FMA, Inc. A ten-page folder describes FileSearch — an automated system for information storage and retrieval.

Planning a System 250

Charles Bruning. "Basic Microfilm Indexing and Filing Techniques" tells how to achieve maximum results from a microfilm system.

Ready-to-Plate Negative 251

Varityper Corp. Information on the Foto-List system which produces a ready-to-plate negative in sequential listing form from original data cards.

Miscellaneous

Magnetic Control Boards 255

Maggie Magnetic Visual Aids. Free catalog on flexible visual control board system.

Small Volume Record Handling 256

Rol-Dex. Leaflet on Rol-Dex, Jr., a portable unit to handle from 2,000 to 12,000 various sized records.

High-Speed Cutter 257

Alves Photo Service, Inc. Details on electronic roll paper cutter.

IDP Labels 258

Allen Hollander Co. Brochure emphasizes need for special IDP labels to prevent equipment breakdown.

Addressograph Plate Conversion 259

Rabinow Engineering Co., Inc. Information on system which converts Addressograph plate impressions to EDP language.

Isotope Techniques 260

Isotopes, Inc. Collection of data sheets describes services in research, measurement and instrumentation related to stable and radioactive isotopes.

Visual Board Control 261

Graphic Systems. 24-page booklet (TA-20) explaining visual board to monitor and control operations.

Automatic Labeler 262

Cheshire, Inc. Literature describing ro-

tary head Model E machine which applies addressing labels.

Portable Prompter 263

Telit Industries, Inc. Information on the TelExecutive, a portable electronic prompter for speakers.

Correction

The co-author of "Sikorsky 'Lifts' Microfilm Use" in the April-June '61 issue of *Systems Management* was Thomas J. Moran (not Morgan).



DYNACOLOR CORPORATION* ANNOUNCES

A NEW HIGH SPEED FINE GRAIN MICROFILM AT LOWER COST

35MM-16MM

*CAN BE PROCESSED BY ANY
COMMERCIAL MICROFILM SERVICE*

NEW MICROFILM ON DISPLAY AT THE NMA
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THE VALUE LEADER OF THE PHOTO INDUSTRY

Circle No. 506 on Post Card

PUBLIC DEBT

continued from page 25



After being filmed, the stubs and bonds go to keypunchers and verifiers where the issue data is punched into the bond. A digital 1-1-6-4 code identifies the bond purchaser both alphabetically and geographically. The code includes the first initial, middle initial, first six letters of the surname and the first four letters of the purchaser's city or town.

In certain large communities there may be 800 to 1,200 common names with common addresses. This list can be considerably narrowed, however, when the issue date is considered. Whenever the actual bond number is known, the alphabetical file is bypassed. Each agent has a control batch number which, along with the issue date, locates the film for a specific transaction.

The verified and keypunched cards start the input to the Minneapolis-Honeywell Datamatic D-1000 computer. The cards are first converted into the numerical and alphabetical-geographical files on magnetic tape. During this conversion the processing errors are detected and transferred to an out-of-balance tape.

To locate the source of processing error, accounting clerks search the rolls of microfilm to match bond listings with the microfilmed bond. Whenever a major error is detected in a bond redemption, a copy of the microfilm is printed out from the reader-printer machine.

Discrepancies are checked through both the microfilm of the stub and the bond to locate cause of the error. Despite 100 per cent verification, a keypunching error

may occur, an error may be made by an agent, or a bond may have been tampered with.

Requests for information about savings bonds, or claims for bonds that have been lost, destroyed or stolen, are received by the Chicago office of the Bureau of Public Debt. This office keeps the records of the paper bonds issued prior to automation and acts as a correspondence center for savings bonds transactions.

The office prepares a card which alerts a computer to print out any transactions for certain bond numbers and tells the computer that certain bonds have been reported lost, destroyed or stolen.

Each day, different portions of the magnetic tape file are updated. The entire file of \$25 Series E bonds is updated over a three-day cycle; the \$50 and \$100 bonds over a one-day cycle for each. It takes from two to five days to process the Chicago cards in the computer.

Like the discrepancies, the information in answer to inquiries is printed out. Joint print-outs of both discrepancies and information are called TIDI tapes by the bureau. This print-out shows the batch number and issue date in order to pinpoint the roll of microfilm on which either the stub or the bond is located.

According to the bureau, the number of inquiries in proportion to the huge file is very small. The number of look-ups is about 6,800 per month.

An alphabetical look-up can result in a multiple search since many persons hold more than one bond.

Source data for the automated system — namely, the carbon copy stub and the cashed-in bond — are not used for reference. The first operation, which is the microfilming, locks the entire set of records into a sequence. Once established, a sequence is maintained intact.

Any usage of the file is handled by printed-out copies of the film. Consequently, there is no charge out system and no necessity for refiling of data. Similarly, the inquiry cards received from Chicago are clipped to the printed-out copies of the microfilm records and these sent to

the person who requested the information.

To keep ownership records intact and safe, the bureau stores the master microfilm negatives off the premises. Instead a diazo-type film copy of the master is used. If this is damaged it can be replaced by another copy.

The source data cards, the stubs and the cashed-in bonds are stored in their original card containers on steel shelves. When the processing of the data is completed, the cards are moved to a storage point. Before the cards are destroyed, a random sample is made. Cards are selected at random from the file and inquiries about these cards are made. When the file of film and tape proves it can answer these test inquiries, official permission is then given to destroy a portion of the cards.

The results are an integrated program in a paperless office containing miles of microfilm and magnetic tape, neatly stored and easily accessible, to maintain faster and more accurate record keeping. □

COLGATE-PALMOLIVE

continued from page 31

belt to the accumulation section. All but pallet loads are assembled here.

A small tote box, coded by the operator with truck dock number designation, then leads the order to a case labeling area, and past a case-counting electric eye. The order continues to one of 6 overhead branch conveyors leading to the truck dock. The coded tote box automatically selects its predetermined loading station and then moves directly into the waiting trailer.

Designed and built by the Alvey-Ferguson Co., the system does many things for Colgate-Palmolive. It gives close control over inventory, allows safer handling, reduces labor costs and integrates with existing billing procedures. Most important, it speeds deliveries by half-a-day with expectations for twice this saving when added revisions are made. □

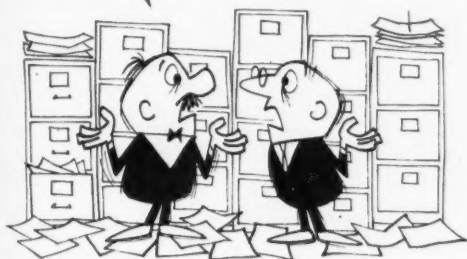
HOW TO KEEP FILING CABINETS FROM TAKING OVER THE OFFICE



OR, WIN THE SPACE RACE WITH THE BRAINS FROM REMINGTON RAND

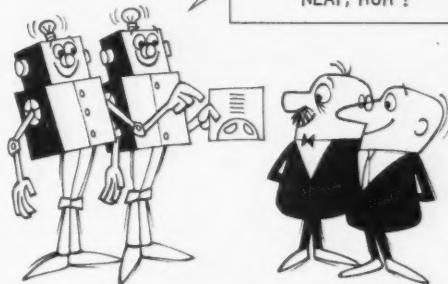
SOMEDAY THESE FILING CABINETS ARE GONNA' CROWD US RIGHT OUT INTO THE STREET.

WE'VE HARDLY GOT SPACE FOR THE OFFICE PARTY NOW!



A SIMPLE PROBLEM FOR REMINGTON RAND MICROFILM, GENTLEMEN.

QUOTING OUR FREE BOOKLET, THE CONTENTS OF 160 FILES-ON MICROFILM-WILL FIT IN ONE CABINET. NEAT, HUH?



SOLD! THEN WE CAN MOVE ALL THESE OLD FILES INTO THE BASEMENT. THEY'VE BEEN HERE SO LONG YOU'D THINK THEY WERE HOLDING UP THE WALLS, HEH, HEH.



LATER

WHAT HAPPENED?

THOSE OLD FILING CABINETS WERE HOLDING UP THE WALLS!



Now! Let the sunlight back into your office. Banish towers of filing cabinets to the basement. With Microfilm, a single cabinet stores records that used to need 160 cabinets. And Microfilm is fast—high speed Remington Rand equipment copies over 500 records per minute. "But," you say, "the speed, convenience, and economy of Microfilm is available only to the huge corporations, with their tremendous filing operations." "Not so," says The Golden Age of Microfilm—a book which visually and verbally tells you all about the latest advances in Remington Rand Microfilm techniques, tells you what Microfilm can (and can't) do for your company, and how it will save you money. For your free copy of this valuable volume, simply send the attached coupon.

Remington Rand SYSTEMS

Division of Sperry Rand Corporation
Room 774, 122 East 42nd St., New York 17, N.Y.

By George, The Golden Age of Microfilm sounds like mighty useful reading. Please send me my free copy.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____ CITY _____

COUNTY _____ ZONE _____ STATE _____

Circle No. 523 on Post Card

NEW PRODUCTS

continued from page 8

Microfilm Reader-Printer 111

Simplified production of microfilm blowbacks from 16 or 35mm, strip film and aperture cards is claimed for two new units being offered by the *Federal Mfg. & Engineering Corp.* Known as the *Federal Micro-Mate* and *Micro-Mate Jr.*, the devices will produce prints in about 10 seconds without the need for a dark-room or dryer. The Jr. model makes prints up to 9 x 14 and the larger model to 18 x 24. Reproductions can be made from copy of any color and can also be used as a standby office copy machine. The units consist of a projector, easel, processor and automatic timer. Price: \$695 and \$395.

Speech Prompter 112

Telit Industries Inc. has introduced an easy-to-operate portable electric prompting device called the *TelExecutive*. The device holds the script on spools and automatically moves it across an illuminated panel at a speed controlled by the speaker. The talk, which may be typed on a large face typewriter, is wound on an interchangeable spool and placed in the *TelExecutive*. The palm-sized hand control will control the speed and direction of the moving script. Each spool holds an hour or more of continuous text depending upon type size. Price: \$169.50.

Stock Quotation System 113

A stock quotation service to be offered to members of the New York Stock exchange has been introduced by the *Telegester Corp.* Called *Teletequote*, the service makes use of a dial device which ties in directly with the *Telegester Data Processing Center* in New York. The information is made visible on a display panel and shows all necessary information.

Automatic Copier 114

A unique, fully automatic copying machine is now being marketed by a group of companies including *Anken Chemical and Film Corp.*, the *Ozalid Div. of General Aniline and Film Corp.*, and *Photek Inc.* The machine will copy any kind of original up to 11" wide and lengths up to 150". It automatically turns itself on when the original is fed into it, makes the exposure, adjusts itself to the length of the original, trims the positive and will produce prints at the rate of four per minute. Copies are permanent and dry flat. The machine, which weighs 65 lbs., is designed for tabletop use and is cased in a molded polystyrene housing. Since rolls of positive and negative material are used, no paper safe is required and visual and audible signals are provided to warn the operator when the unit is empty.

Faster Phone 115

The *Bell Telephone System* has developed and will market later this year a card dialer that has an unlimited capacity and will speed the mechanics of telephoning. Coded plastic cards on which phone numbers have been previously punched are inserted into the phone and the dialing initiated at the press of a bar. Numbers with up to 14 digits may be handled by the system.

Micro-Film Printer 116

A continuous 35mm contact printer for microfilms has been introduced by the *Uhlir Cine Machine Co.* Designed for unperforated films, the unit features a rotating printing drum to eliminate scratches on the negative, a gear drive for extra long wear and a rheostat-operated light density control. Three flanges and one magazine are supplied for a 1200' roll of negative, positive or duplicating film. Speed of the unit is 1600' per hour.

Punch Form Index 117

An index specially designed to provide instant reference to tabulated data kept in thin post binders has been developed by the *G. J. Aigner Co.* The index tabs are fused clear plastic and will accommodate special titles. They have a 1/2" extension and are 1 1/2" in length. Careful attention has been given to making the binding sheet long wearing by reinforcing the bound edge with a strip of Mylar. These sheets will fit all 1/8" thin post binders. Inserts for the tabs are available in typewriter spacing or in continuous strip form for typing or control punching.

Self-Contained Copier 118

Transcopy Inc., subsidiary of *Anken Chemical & Film Corp.*, has introduced a budget-priced photocopy which requires no siphons, mixing bottles or paper safes. Pre-mixed developer comes in a disposable cartridge which snaps into place and fills the tray when the machine is turned on. The *Transmatic I* has a paper safe built right into the base and is housed in an attractive case. All colors on the original are picked up by the process and copies may be made on white or a variety of colored papers.

Recording Camera 119

FMA Inc., has developed a high resolution recording camera which is believed to be the first planetary unit to employ stroboscopic lighting. Part of the *File-Search* system, the unit simultaneously puts a code field and document image onto frames of microfilm for ultimate search and retrieval. The recording camera, filming table and strobe lighting fixtures are integrated into a unit that stands 78" high, 38" wide and 30" deep.

Automatic Collator 120

An automatic collator designed to re-

duce hand collating costs by as much as 90% has been introduced by *General Binding Corp.* The *GBC Model C3* Collator handles legal and letter-size papers and staples and stacks them automatically. The machine is available in three separate models, including 10-bin, 12-bin and 16-bin collating capacities and will handle up to 12,000 sheets per hour at a rate eight times faster than by hand. Installation requires less than 4 x 4' of floor space.

Thin-Film Memory Computer 121

Remington Rand's Univac 1107, an advanced solid-state EDP system, is said to be the first computer to employ thin magnetic film memory. This enables the machine to attain internal referencing rates of speed measured in billionths of a second, as compared to the millions of a second for previous computer systems.

Data Converter Line 122

A series of data converters has been introduced by *Computer Control Co.* The new machines accept or produce data in the coded formats of all commonly used automatic data processing systems. Each model in the series includes only those features needed to perform the translations required by the user's own EDP system.

Reader Printer 123

A pushbutton-operated microfilm reader-printer has been introduced by *Recordak*. The unit, which is fully automatic in operation, will accept 16mm, 35mm rolls, aperture cards and card size film jackets. Images are enlarged on an 11" x 11" self-contained screen and a variety of lenses are available which will provide images and prints up to 87% of original size. The prints, delivered from the base of the machine, are 8 1/2" x 11" and are delivered cut to size and squeegee dry. Loading and operation is conducted under normal room light.

Carbonless Sheet 124

A typewriter carbon without carbon or paper has been introduced by *Columbia Ribbon and Carbon Mfg. Co.* The new copy sheet is said to outlast conventional materials by five to one times. Called *Plastipol F-100 Carbnpad*, the product is made of a tough film base material coated with a plastic ink formula. The sheets come in pads of 100 which occupy 1/3 less space than regular carbons. *Plastipol* copy is also completely smudgeproof and permanent.

Storage Binder 125

A convenient and inexpensive method for permanent storage of punched office forms is provided by two versions of the *Perma Snap Binder* manufactured by the *Office Equipment Mfg. Co.* Eighteen stock models are offered with 1/8" flexible nylon posts for marginal punched burst and unburst forms. Thirty models

are available with 3/16" aluminum posts for other forms. Papers are bound into the fibre board storage cartons that may be later opened for reference. The Perma Snap Binders are delivered knock-down flat in plastic bags and when set-up, stack.

Remote Control Unit 126

Convenient fingertip control of the seven most-used collator set-ups is now possible with the Kollator Kontrol offered by Automatic Information Products Co. The unit consists of a small console that mounts on top of the collator and a flat connecting cable.

After the wires are plugged into the control panel, all basic matching and merging operations can be performed with the turn of the Operation Selector Switch on the console. When needed, other special collator jobs can be wired to the panel without removing the Kollator Kontrol wires.

Label Applier 127

A machine that applies labels pre-addressed from punched cards, magnetic tapes, plates and stencils to lightweight printed pieces has been announced by Cheshire Inc. The Cheshire Model E applies all types of preaddressed labels and can be easily operated by office personnel. Printed pieces are fed from an adjustable vacuum hopper which can be refilled while the machine is in operation. Additional labels and more glue can also be added during the run. To prevent lost labels, a photo-electrically controlled throw-out is incorporated.

Time Indicator 128

A tamper-proof timing device that operates only when electrical equipment is energized has been introduced by Automatic Timing and Controls Inc. Easily installed, the cumulative timing unit records time of machine operation and provides a reliable indication for regular servicing and maintenance. The Series 5700 has six display wheels with large black numerals on white nylon and operates off a variety of voltages and cycles. Installation may be either flush with the equipment, or back, top or bottom mounting.

Tape Reader 129

Data Stor division of Cook Electric Co. has announced the development of a punched tape reader suitable for "on-line" service in computer, communication and control applications. The Model 84 requires only the connection to a power

source and load and with a nominal tape length of 500' provides a total punched tape capacity of approximately 60,000 characteristics. Features of the Model 84 include automatic reel brakes, tape breakage or tape runout sensor and automatic shutdown on reading lamp failure.

Tape Winder 130

The Whiteford Laboratory has announced a series of "right side" tape winders which may be used as an integral part of communication, electronic or data processing equipment. The winders are available with 6", 8" or 12" diameter reels and will hold approximately 90 feet of tape per inch of diameter. All output speeds and tensions are automatically adjusted for and operation can be continuous, intermittent or unattended for long periods of time.

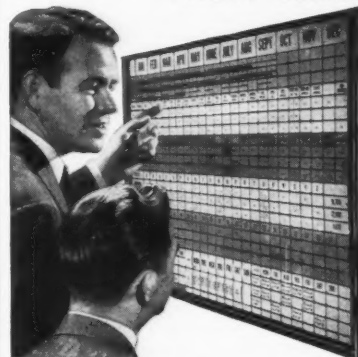
Metal Paper Trimmer 131

A redesigned Triumph Manual Paper Cutter has been introduced by Michael Lith Sales Corp. The unit will cut a stack of paper up to 3 1/4" in height. Precision cutting down to 1/2" is provided by a front wheel calibrator that automatically moves the serrated back gauge to divisions of 1/32". The Triumph is available in 14" or 18" sizes.

Control Console 132

The Frederic Luther Co. has introduced a Camera Controle Console designed for use with planetary microfilm cameras. The basic unit simplifies light balancing by providing separate voltage controls for each lamp. A wide range voltmeter permits fine voltage tuning and a visible signal for exposure cycle is also provided. The console which is 30" wide may also be fitted with a multiple exposure control kit, remote exposure meter monitor, motorized reduction selector control and an ultra fine tuning voltage control. Price of the basic unit is \$775. FOB Indianapolis.

You Get Things Done With Boardmaster Visual Control



- ☆ Gives Graphic Picture of Your Operations—Spotlighted by Color
- ☆ Facts at a glance — Saves Time, Saves Money, Prevents Errors
- ☆ Simple to operate — Type or Write on Cards, Snap in Grooves
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- ☆ Made of Metal. Compact and Attractive. Over 500,000 in Use

Full price \$49.50 with cards

FREE 24-PAGE BOOKLET NO. TA-30 Without Obligation

Write for Your Copy Today

GRAPHIC SYSTEMS

Yanceyville, North Carolina
Circle No. 509 on Post Card

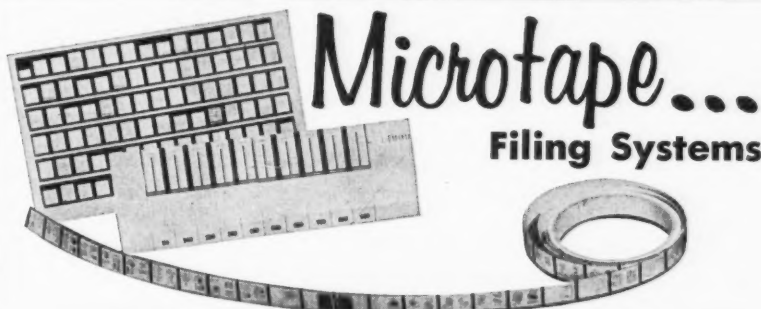
Now Available Programming the IBM 1401

Write for free catalogue describing our Business Computer Courses

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Circle No. 504 on Post Card



WE WANT TO BUY!
IF YOU ARE CONVERTING TO ELECTRONIC OPERATIONS — YOU ARE MAKING OBSOLETE, SOME ADDRESSING, MAILING AND OFFICE MACHINES — WHICH WE WANT TO BUY. SEND US INFO, AND WE WILL QUOTE.

MAILERS EQUIPMENT CO., INC.
DEPT. 5 40 W. 15th ST. N. Y. 11, N. Y.

MICROTAPE is designed for business records (systems applications) or single copy or minimum copy uses. It consists of 100' rolls of 16MM or 35MM positive microtext printed from negative rolls having a pressure sensitive adhesive laminated on the back side. These rolls are then cut into proper units and applied to an ordinary index card.

MICROTAPE SYSTEMS 44 LAURA STREET NEW HAVEN, CONN.

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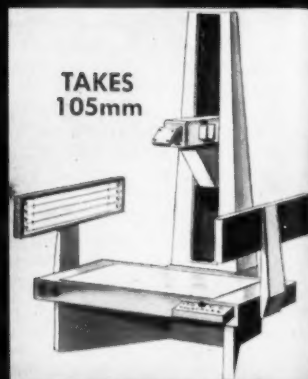
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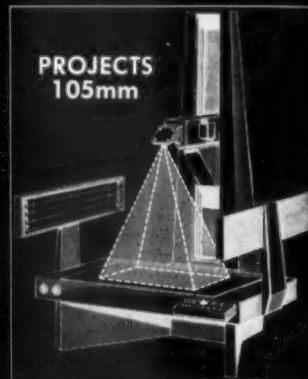
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TAKES
105mm



PROJECTS
105mm



TAKES
35mm



PROJECTS
35mm



FORMS

continued from page 32

to the right side of the form, and as continuous as possible.

6. Check methods of storing file copies (both temporary storage and permanent storage), and arrange the items on the form which are referred to in the files for easiest use.

This will eliminate the possibility of the filing reference being placed under a fastener or in the general binding area. Prepunch filing holes on copies to be stored in binders.

7. Preprint repeated or important information.

Control numbers are frequently preprinted in red ink. Such items as terms and shipping information can often be preprinted and highlighted by a different color ink, large size printing, or by placing these items in an area boxed in by use of heavy lines.

8. Place all preprinted informa-

tion on the form outside the productive typing area.

Such information could be placed at the top, bottom, or right side of the form away from the flow of writing. This will eliminate passing the machine over preprinted information by use of hand spacings, hand positionings or tab spacings.

9. Use boxed spaces for items, and vertical lines in the body of the form to divide columns. This type of construction is not only easier to fill in, but easier to read.

10. Arrange boxed spaces and vertical columns to use the minimum number of tab stops.

11. Identify copies.

Use different color copies for different departments. Preprint distribution titles on copies.

12. Use an efficient form construction, and check carbon impressions within the set.

By using forms with carbon interleaved, the non-productive motions

of assembling and handling sheets of paper and carbon can be reduced. This type of forms construction also gives fast carbon separation, much better carbonization (carbon is used only once), better registration from copy to copy within the set, and is much cleaner to work with as the operator seldom touches the carbon.

13. Combine related forms.

Study the source records and subsequent records which show the same information. It may be possible to combine the forms for writing of identical information. By use of short or narrow copies; short carbons, spot carbon, strip carbon or die-cut carbon; or blackout printing, various information may be eliminated from copies within the combined form. It is possible to construct the set so that certain copies and carbons within the set are held intact after the initial writing for a second writing operation by use of staples or glue. ☐

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NEWSMAKERS

Stevens L. Shea

Our cover man, Stevens L. Shea, Vice President, Data Processing, American Insurance Company, exemplifies a new type of executive. In the words of the American Management Association, such an executive must "... be capable of planning, organizing and establishing policy for total administrative function. He must have experience in data processing, systems management, office administration, management engineering and general administrative activities."

Not surprisingly, Stevens L. Shea, an AMA Vice President and board member, is helping to develop such executive talent. This month he joins other members of AMA's Administrative Services Planning Council at Hamilton, N. Y. for a bi-annual meeting to discuss organizational problems, planning and directing of administrative activities and progress in these areas as they relate to EDP, management information systems and operations research.

Part of the discussion will involve current and long-range administrative plans of various firms and institutions, serving as a guide to future AMA programming. While the planning council meets, the staff of AMA's Administrative Services Division, headed by Gabriel N. Stilian, will be taking notes and planning future courses and programs to provide high quality management development for business and industry.

Harry Bailey

Harry Bailey, director of research and development, Jersey Tab Card Corp., is a fellow who does not let grass grow under his feet. Recently he was the guest speaker at a meeting of the North New Jersey Chapter of the National Machine Accountants Association. His presentation on tabulating card design and demonstration of new concepts

in tab card standardization was so well-received that his parent com-



pany is planning further seminars on the subject of tab card design. Personnel working with tab cards in the metropolitan New York area will be invited to register shortly.

Adm. Frederick L. Hetter

Rear Adm. Frederick L. Hetter, retiring Chief Executive of the Naval Supply Center, Bayonne, N. J., has been one of the guiding



lights in Navy automation programs for years. His work at Bayonne managing a \$175 million supply system (see SM, April 1961, p. 16) has won him wide acclaim. Before that assignment he planned and established a data processing network for the Naval Aviation Supply System. Recently this remarkable Admiral's achievements were noted

in the Congressional Record which saluted his efforts in creating 96.9 per cent effectiveness mark in supply support.

Adm. Hetter plans to enter private industry on separation from the service.

C. H. Miller

C. H. Miller, Systems and Procedures Manager of the H. D. Lee Company, made office management sit up and listen recently at the 42nd International Conference sponsored by the National Office Management Association. Pointing out soaring equipment, employee and space costs, he stressed that new office systems (to cut administrative costs) were not a luxury but a must. He urged greater use of copying systems as a means of cutting duplication in office procedures created by the current paperwork revolution.

At H. D. Lee, Miller is responsible for systems and procedures that apply to accounting, sales and warehousing in the Kansas City home office and at eight branches. He has previously held top management posts with Ford Motor Company and Trans World Airlines.

James N. Ryan Robert C. Johnson

From data processing to systems and procedures has been the road to management success for James Ryan and Robert Johnson, respectively, at Barber-Greene Co., Aurora, Illinois. Ryan is the newly named Director of Systems and Procedures and Johnson is Manager of the Data Processing Department. Both positions are new with the company and a tribute to the efforts of Ryan and Johnson in promoting systems management with their company. Previously Ryan held the post of Tabulating Department Manager. Johnson was Assistant Tabulating Department Manager.